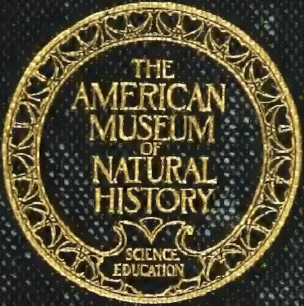
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American Museum of Natural History

77th Street and Central Park West

New York City, Nov 30, 1917

To Dr Arthur A Allen
with full appreciation
of his work in Colombia
and regrets that he
could not have been
longer on our Staff

Frank M. Chapman

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BULLETIN
OF
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VOLUME XXXVI, 1917

EDITOR, J. A. ALLEN

THE DISTRIBUTION OF BIRD-LIFE IN COLOMBIA; A CONTRIBUTION TO A BIOLOGICAL SURVEY OF SOUTH AMERICA

BY
FRANK M. CHAPMAN

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CONTENTS OF VOLUME XXXVI.

THE DISTRIBUTION OF BIRD-LIFE IN COLOMBIA.

PART I.

PAGE.

Introduction 3
Acknowledgements 8
A Review of Colombian Ornithology 11
  Bogotá Collections 11
  The 'Bogotá' Region 13
  Claude Wyatt's Explorations 15
  Berlepsch on a Bucaramanga Collection 15
  Wirt Robinson on the Magdalena 15
  Salmon's Collections in Antioquia 16
  DeLattre in Western Colombia 17
  The Michler Expedition to the Atrato 17
  Sundry West Colombian Expeditions 17
  Mervyn G. Palmer's Collections 18
  The Santa Marta Region 18
The American Museum's Expeditions in Colombia 20
  Expedition No. 1: Buenaventura to the Cauca Valley: Reconnaissance, Cali to Giradot 21
  Expedition No. 2: The Popayan Region 30
  Expedition No. 3: Lower end of the Cauca Valley, the Quindio Trail, Cartago to San Juan River 32
  Expedition No. 4: Cali to San Agustin 40
  Expedition No. 5: San Agustin to the Caquetá Region 45
  Expedition No. 6: Tumaco-Barbacoas 49
  Expedition No. 7: The Bogotá Region 50
  Expedition No. 8: The Antioquia Region 58
Auxiliary Collections 68
An Outline of Colombian Topography 70
Remarks on the Distribution of Forests 72
Notes on Colombian Climatology 79
The Life Zones of the Colombian Andes 84
The Tropical Zone and its Faunas 93
  The Colombian-Pacific Fauna 106
  The Cauca-Magdalena Fauna 117
  The Caribbean Fauna 130
  The Orinocan Fauna 132
  The Amazonian Fauna 133

PAGE.
The Subtropical Zone and its Faunas 135
The West Andean Subtropical Fauna 145
The East Andean Subtropical Fauna 149
The Central American Extension of the Subtropical Zone 151
The Temperate Zone 159
The Paramo Zone 166
Tabular Synopsis Showing Zonal Distribution of Families of Colombian Birds 168

PART II.

Classification 170
Number of Species Included 179
Forms Described as New 181
North American Migrants 183
Sequence of Localities Cited 185
References 185
English Names 186
Color Terms 186
Distributional List of Species and Subspecies 187
Gazeteer of Colombia Collecting Stations 640
Bibliography 657
Errata 660
Index 661

LIST OF ILLUSTRATIONS.

PLATES.

No. FACING PAGE
I.— Map of Colombia . . . . Frontispiece
II.— Fig. 1. The Upper Dagua near Caldas; Fig. 2. Lower Dagua (Arthur A. Allen) 20
III.— Fig. 1. Road between Caldas and San Antonio (Arthur A. Allen); Fig. 2. Forest at San Antonio (Frank M. Chapman) 22
IV.— Eastern side of Western Andes from San Antonio (Frank M. Chapman) 24
V.— Fig. 1. Western slope of outer ridge of Central Andes; Fig. 2. Eastern slope of same ridge as above at same altitude (Frank M. Chapman) 26
VI.— Fig. 1. Cauca River near Buga; Fig. 2. Forest on the Cauca River at Rio Frio (Leo E. Miller) 26
VII.— Fig. 1. Santa Isabel from Laguneta; Fig. 2. Laguneta (Frank M. Chapman) 28
VIII.— Fig. 1. The Quindio Trail; Fig. 2. The Quindio Trail (Frank M. Chapman) 28
IX.— Fig. 1. Railroad between Honda and La Dorada; Fig. 2. Plains of Tolima (Frank M. Chapman) 30
X.— Fig. 1. Crest of Western Andes, west of Popayan; Fig. 2. La Gallera, Western Andes (Leo E. Miller) 32

No. PAGE.
XI.— Fig. 1. Boquilla Valley from Salento; Fig. 2. Stream near Salento (Arthur A. Allen) 34
XII.— Fig. 1. Chicoral Bridge; Fig. 2. Giradot, upper Magdalena River (Frank M. Chapman) 36
XIII.— Fig. 1. Paramo of Santa Isabel, Central Andes; Fig. 2. Paramo of Santa Isabel, Central Andes (Leo. E. Miller) 38
XIV.— Fig. 1. Between Buenaventura and San José (Arthur A. Allen); Fig. 2. Juntas de Tamaná (Leo. E. Miller) 40
XV.— Map of Central Western Colombia 42
XVI.— Fig. 1. Near the Source of the Magdalena River; Fig. 2. Los Chorrillos, above Almaguer (Leo E. Miller) 44
XVII.— Fig. 1. Coast near Carthagena (Leo E. Miller); Fig. 2. Shores of the Lower Magdalena River (Frank M. Chapman) 50
XVIII.— Fig. 1. Central Lower Magdalena River; Fig. 2. A Wood Yard in the Magdalena Forests (Frank M. Chapman) 52
XIX.— Fig. 1. Slopes above Bogotá; Fig. 2. The Environs of Bogotá (Frank M. Chapman) 54
XX.— Fig. 1. Eastern Andes between Bogotá and Chipaque; Fig. 2. Chipaque (Frank M. Chapman) 56
XXI.— Rio Negro from Monteredondo; Fig. 2. Junction of Rio Cáqueza and Rio Negro (Frank M. Chapman) 58
XXII.— Fig. 1. Country near Sta. Elena, Central Andes; Fig. 2. Western Andes near Antioquia (Leo E. Miller) 62
XXIII.— Fig. 1. The Paramillo, Western Andes; Fig. 2. Characteristic Vegetation on the Paramillo (Leo E. Miller) 64
XXIV.— Fig. 1. Alto Bonito, Rio Sucio; Fig. 2. Rio Cauca at Puerto Valdivia (Leo E. Miller) 66
XXV.— Distribution of Forests in Colombia 72
XXVI.— Life Zones and Faunas of Colombia 84
XXVII.— Western Slope of Central Andes from La Manuelita (Frank M. Chapman) 94
XXVIII.— Fig. 1. Farallones of Cali, Western Andes; Fig. 2. Farallones of Cali, Western Andes (Frank M. Chapman) 96
XXIX.— Fig. 1. Cauca Valley from San Antonio; Fig. 2. Cauca Valley from Miraflores (Frank M. Chapman) 126
XXX.— Fig. 1. Near Villavicencio; Fig. 2. Near Villavicencio (Frank M. Chapman) 132
XXXI.— Subtropical Forest (Frank M. Chapman) 138
XXXII.— Heart of the Central Andes (Frank M. Chapman) 140
XXXIII.— Rio Negro Cañon near Monteredondo (Frank M. Chapman) 148
XXXIV.— Fig. 1. Primeval Forest at Buena Vista; Fig. 2. Forest Interior at Buena Vista (Frank M. Chapman) 150
XXXV.— Figs. 1 and 2. Characteristic Trees of Temperate Zone Forest (Frank M. Chapman) 160
XXXVI.— Wax Palms (Frank M. Chapman) 258
XXXVII.— Fuertes's Parrakeet, *Hapalopsittaca fuertesi* (Chapm.) (Drawn by L. A. Fuertes.) 264
XXXVIII.— Bills of Toucans (Drawn from fresh specimens by L. A. Fuertes) 328

No. Page.
XXXIX.— Miller's Ant Pitta, *Grallaria milleri* Chapm.; Allen's Ant Pitta, *Grallaria alleni* Chapm. (Drawn by L. A. Fuertes.) 396
XL.— Black-headed Finch, *Atlapetes fusco-olivaceus* Chapm.; Yellow-headed Finch, *Atlapetes flaviceps* Chapm. (Drawn by L. A. Fuertes.) 574
XLI.— Key Map to Colombian Collecting Stations 656

Text Figures.

1. Life Zones of the Colombian Andes 86
2. Ideal section through the Ecuadorian Andes to show zones of vegetation 87
3. Known range of *Sapayoa ænigma*, a characteristic species of the Colombian-Pacific Fauna of the Tropical Zone 107
4. Range of *Zarhynchus wagleri* 108
5. Known range of *Osculatia* 111
6. Distribution of the western races of *Manacus manacus* 112
7. Known range of *Arremonops conirostris* 113
8. Ranges of *Capito squamatus* and *C. maculicoronatus* 114
9. Known distribution of *Micromonacha lanceolata* 118
10. Known range of *Thamnophilus nigriceps* 119
11. Range of *Ostinops decumanus* 120
12. Known range of *Myrmeciza exsul* 121
13. Range of *Donacobius atricapillus* 123
14. Range of *Thraupis palmarum* 125
15. Distribution of the Cock-of-the-Rock 137
16. Distribution of *Formicarius rufipectus* 147
17. Distribution of *Buarremon brunneinuchus* 152
18. Distribution of *Atlapetes gutturalis* 154
19. Semi-diagrammatic representation of the range of *Scytalopus niger* 162
20. Known distribution of *Pyroderus scutatus* 177
21. A probable case of Hybridism. Ranges of *Ramphocelus icteronotus* and its allies 611

LIST OF SPECIES AND SUBSPECIES DESCRIBED OR RENAMED IN THIS VOLUME.

	Page.
Zenaida ruficauda antioquiæ Chapman	207
Phæthornis striigularis subrufescens Chapman	283
Helianthea cœligena ferruginea Chapman	298
Vestipedes paramillo Chapman	301
Brachygalba fulviventris caquetæ Chapman	338
Pittasoma harterti Chapman	392
Pipra leucocillà minimus Chapman	480
Troglodytes musculus neglectus Chapman	520
Henicorhina prostheleuca albilateralis Chapman	524
Cyclarhis flavipectus parvus Chapman	540
Pseudochloris citrina antioquiæ Chapman	571

BULLETIN

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AMERICAN MUSEUM OF NATURAL HISTORY.

VOLUME XXXVI, 1917.

THE DISTRIBUTION OF BIRD-LIFE IN COLOMBIA; A CONTRIBUTION TO A BIOLOGICAL SURVEY OF SOUTH AMERICA.

By Frank M. Chapman.

Part I.

INTRODUCTION.

SYNOPSIS.

Part I.

Introduction
Acknowledgments
A Review of Colombian Ornithology
The American Museum's Expeditions in Colombia
Auxiliary Collections
An Outline of Colombian Topography
Remarks on the Distribution of Forests
Notes on Colombian Climatology
The Life Zones of the Colombian Andes
The Tropical Zone and its Faunas
The Subtropical Zone and its Faunas
The Temperate Zone
The Paramo Zone

Part II.

A Distributional List of the Birds Collected in Colombia by the American Museum's Expeditions

Appendix.

A Gazeteer of Colombian Collecting Stations
Bibliography

Index.

Part I.

INTRODUCTION.

Our knowledge of the animal life of regions remote from the older centres of learning has been acquired through essentially similar channels. The casual specimens brought back, in whole or part, as curios by early explorers, missionaries, travelers and adventurers were, in some instances, followed by shipments of the pelage or plumage of those species having a commercial value. Material of this kind was generally collected by natives and was lacking in data. Later came the exploring naturalists and professional collectors. When not members of an expedition designed to enter some hitherto unknown region, they at first found near the pathways of trade vast territories as yet zoölogically unknown. It was only when the faunas of the regions reached by these long existing, if little traveled, routes failed to yield further novelties, that naturalists penetrated into less accessible places which, for some reason, had not lured the prospector, trapper or trader.

These purely natural history expeditions have, as a rule, gone out to discover new species. Collections were made at widely separated localities with the double object of avoiding duplication of material, and of securing forms which had not before been taken.

As long as large areas remained unexplored it is natural that we should desire a knowledge of their animal life. But having acquired this knowledge, it is also natural that we should wish to solve the problems which arise from its possession. Thus, through the sources mentioned, we now have so complete a knowledge of South American bird-life that it is not probable further exploration will reveal any considerable number of distinct species. In short, we have now reached that stage in our study of the South American ornis, when, the search for species over, we may attempt to learn something of the habits, racial variations and geographic distribution of the between four and five thousand birds known to inhabit that country.

Acting on this belief, the American Museum of Natural History inaugurated in December, 1910, an intensive zoölogical survey of South America. For the present the work of this survey is restricted to the collecting of birds and mammals and of information concerning them and the country they inhabit. Our ultimate object is the discovery of the geographic origin of South American life, but it is understood that this major problem cannot be successfully approached until we have a far more definite knowledge of faunal areas in South America than exists at present.

This knowledge is not within our reach until we have a much larger number of specimens than our museums now contain. These must be collected, not at widely separated localities, but at as many stations as are necessary to represent the principal physiographic and climatic areas contained in the range of the species.

Our expeditions were instructed to make as complete a collection of the birds at each station as circumstances permitted. The commoner, more widely distributed species are more apt to reflect environmental influences than rarer ones of limited distribution, and are often, therefore, of more scientific value.

One unfamiliar with the problems involved might imagine that we have accumulated an unnecessarily large number of specimens.[1] But I regard each specimen as standing for a concrete fact. It places beyond dispute the occurrence of its species at a definite place on a certain date. The condition of its sexual organs helps to determine the relation between season and period of reproduction; its external characters enable us to distinguish between individual variations of sex, age and season, and those which result from environment and mark the nascent species.

The bird-life of Colombia is probably as well known as that of any other part of tropical America of similar extent, but one has only to read the 'Review of Colombian Ornithology,' presented beyond, to realize how wholly inadequate for the ends in view, were the existing data in regard to the distribution of birds in Colombia when we began our work there.

To determine the boundaries of zones and faunas as they are manifested by birds and mammals is our first aim, and in the course of this work we trust that our study of purely local conditions will at times so closely connect cause and effect, that we may throw some light on the laws governing the origin of species and the distribution of life. It is also hoped that the technical reports on our large collections may be acceptable to the systematic ornithologist.

---

[1] Lest we be accused of needless sacrifice of life, it will be well to state that our collections are far from sufficient satisfactorily to settle all the questions of speciation and distribution raised by our studies.

From the standpoint of bird protection, the number of specimens taken has produced about as much effect on Colombian bird-life as would the collecting of the same number of plants have on the Colombian flora. The results of general collecting on the avifauna of a region as a whole are always negligible. It is only when the collector's attention is focused on a certain species that its numbers are appreciably diminished. A milliner's agent, for example, whom I met in Mendoza, Argentina, told me that he, alone, had sent the wing and tail-quills of 16,000 Condors to Paris! All were killed in the Argentine Andes where, in consequence, the species has become comparatively rare.

On the other hand, eighty years of general collecting for millinery purposes in the Bogotá region has not, so far as we could observe, seriously affected the numbers of birds inhabiting it. Our expedition No. 7, in passing from the Magdalena Valley over the Eastern Andes to Villavicencio, and hence through the heart of the Bogotá region, secured over five hundred species of land-birds in some two months' collecting, a number which clearly indicates the richness of the avifauna. Nevertheless, from this region, as stated above, hundreds of thousands, perhaps even millions, of birds have been shipped to European dealers.

In view of these facts, it is hardly necessary to add that our average of twelve specimens per species has not perceptibly reduced the bird-life of the wide area over which we worked!

Colombia was selected as our first field of operations, not because we believed it to be zoölogically the least known part of South America. On the contrary, so far as birds are concerned, the trade in native-made, 'Bogotá skins' has doubtless resulted in a greater number of specimens being shipped from Colombia than from any other part of South America.

Colombia was chosen, therefore, because of its proximity, because circumstances[1] had already aroused our interest in its avifauna, because lying at the base of the Isthmus of Panama it is also at the *crux* of the problem of intercontinental relationships, and because it possesses more diverse physiographic and climatic conditions, combined with a greater variety of animal life, than any other part of South America of similar extent.

The intensely humid Pacific, and arid Caribbean coasts, isolated Cauca and upper Magdalena Valleys, widespreading Amazonian forests and no less extensive llanos, three distinct mountain ranges and insular mountain mass of Santa Marta, each with four zones of life, give exceptionally wide scope for the manifestation of biogeographic phenomena in Colombia.

From December, 1910, to April, 1915, we have had from one to six collectors in Colombia, crossing and recrossing the mountains and traversing the intervening valleys in pursuance of a carefully planned survey, designed to extend from sea-level to snow-line, and from the Pacific coast to the tributaries of the Amazon and Orinoco.

At the outset we were impressed by the absolute necessity of determining the level, as it were, at which a species flows before we could hope to discover whence it came and whither it is going.

A study of the distributional problems presented by Colombian bird-life, based on a collection of specimens from unknown altitudes, would lead to as inaccurate and confusing results as would the study of a collection of fossils from unknown geological formations.

The differences between the bird-life of the Tropical and Temperate Zones, for example, are equally important whether occasioned by latitude or altitude. No one would think of removing the labels from specimens collected on the Amazon and in Argentina and then writing of them as having all been taken at one locality. But it would be no more improper to do this than to write of the distribution of bird-life in the Eastern Andes of Colombia on the basis of a collection of native-made 'Bogotá' skins.

As a result of our labors, we are now in possession of approximately 15,775 birds and 1600 mammals, all carefully labeled with locality and altitude, as well as many field-notes on distribution.[1] To these data the writer can add information gained on two expeditions which have led him across the three ranges of the Colombian Andes, from Buenaventura on the Pacific coast to Villavicencio at the eastern base of the Eastern Andes. Not only does a field experience acquaint one with the country, and all that such personally acquired knowledge implies, but it gives one a supply of *negative* facts which the most extensive collections cannot furnish. While specimens show where a species *does* occur, they fail to tell where it does *not* occur, and the latter fact is quite as important as the former. But when one is reasonably familiar with the appearance, especially in life, of the birds of a country, not only the presence but also the absence of the more common or conspicuous species is noted. The altitudinal ranges of those most easily observed can be determined with more or less accuracy even from horseback as one travels slowly through the mountains. Climbing to the summit of ridge after ridge, and descending to the floor of the valleys between them, species appear and disappear at certain altitudes with a regularity which enables one to predict with more or less certainty when they will be found and when lost.

Satisfactory determination of our Colombian specimens, and a true conception of the limits of those faunal areas lying only partly in Colombia required field-work in contiguous regions. Richardson, was, therefore, despatched to Ecuador where he collected some 4000 specimens, while with Anthony and Ball he secured 1800 specimens in eastern Panama. The Smith collection of birds from the Santa Marta region has also been of great service for comparison with our material from other parts of Colombia.

The routes followed by our eight expeditions, and the localities at which we, as well as others, have collected, are shown on the map accompanying our Gazeteer of Colombian collecting stations; while full itineraries of each expedition are given beyond.

It will be observed that our work has been restricted to what may be termed Andean Colombia. We have not attempted to penetrate the Amazonian forests beyond the upper Caquetá, or to explore the llanos east of Villavicencio. The uniformity of environmental conditions to the eastward of these points, in connection with our knowledge of Amazonian and Orinocan bird-life, warrant the belief that we should not find eastern Colombia to possess any marked faunal characteristics not shown by adjoining regions in the same zones.

The Sierras of the upper Uaupes and upper Inrida doubtless offer habitats not afforded by the country from which they rise, but the explorations of Rice fail to show a higher altitude in these mountains than 2850 feet, leaving their summits therefore, so far as known, in the Tropical Zone. The zoölogical exploration of these Sierras, is, however, greatly to be desired.

---

[1] *Cf.* Bull. A. M. N. H., XXXI, 1912, p. 139.

We have done no collecting in the Eastern Andes north of Cundinamarca, since the papers of Wyatt and Berlepsch indicate that this region has no faunal features which are peculiar to it; but we do feel the need of exact data, particularly in regard to the distribution of forests, from the extreme northern end of this range.

In Antioquia we have felt compelled to duplicate to some extent the work of Salmon, especially in the Tropical Zone, which, lying in the region where Pacific coast and east Andean faunal elements meet, occupies a position of much importance.

The Santa Marta group affords a closely related but independent problem to the one we have attacked, and its solution may well be left in the experienced hands of Mr. M. A. Carriker, Jr., whose six years' residence in this region has given him exceptional opportunities for the continuous study of its life.

Even with the restrictions named, the territory to be examined is so large, its topography so varied, its fauna so rich, and much of it is so comparatively inaccessible, that we have covered it only superficially. But the resources at our command, and the extent of our ultimate plan, have made it imperative that we should make only a reasonably thorough reconnaissance of this part of the field, if we would hope to advance our study of the major problems involved in other parts of South America.

It was a constant source of regret to us that we were not accompanied by a botanist who might have collected and identified at least the more characteristic plants of each zone and fauna. I feel, however, that the conclusions reached, based wholly on birds, have, in some respects, a greater value than if they had been based on the combined study of birds and plants. In their present form they constitute an independent contribution to zoögeography, solely from the standpoint of ornithology. The final determination of zonal, faunal and floral boundaries, will, in my opinion, be reached by the combination of similar independent contributions from the botanist and students of other branches of the animal kingdom. Meanwhile, comparison of the results here presented with those given by Wolf (Geografia y Geologia del Ecuador; see beyond) based only on plants, shows a most assuring agreement.

In this connection I desire to state with emphasis that the maps and profiles accompanying this report are not assumed to possess more than semi-diagrammatic accuracy. Colombian physiography is still too imperfectly recorded to supply a base map on which faunal data might be entered. It is, indeed, so indefinitely diversified that our entire time in Colombia might have been devoted to a single mountain range and still not have given us the information needed to map its zones and faunas with a thoroughness which would begin to express all the facts and factors involved.

We must, therefore, leave to future workers the task of filling in the details of our work in Colombia, with a hope that they will find the zonal and faunal boundaries here proposed at least fundamentally correct.

ACKNOWLEDGMENTS.

The American Museum gratefully acknowledges the courtesies extended to it by the Colombian Government through its representatives in this country, and its administrators at the ports of Barranquilla, Buenaventura, and Tumaco. The consideration shown us by these gentlemen, and the promptness with which our equipment and supplies have been admitted to their country has materially advanced the objects of our expeditions.

To the representatives of our own country in Colombia we are also indebted for many courtesies.

We have received so many favors from individuals that properly to acknowledge them would require the enumeration of the names of the scores of persons on whom, for one purpose or another, we have called for assistance. Our requirements were often so unusual, or, to us, so pressing, that to meet them was frequently not a matter of their money value, and we had then to rely upon the generosity and good-will of those on whom we were in truth dependent. In this connection we are particularly under obligation to Mr. Chas. J. Eder, of the beautiful sugar estate La Manuelita, near Palmira in the Cauca Valley. After entertaining our first expedition at his home, Mr. Eder not only placed his bungalow 'Miraflores,' in the mountains, and ranch 'Guengüe' at our disposal, but supplied us with mules to make the journey from one to the other. We have also to thank Mr. Eder for many personal attentions which added materially to our comfort, and for letters to his agents in various parts of Colombia.

Mr. Henry Eder, of the firm Eder & Co., at Cali, acted as our forwarding agent during the year or more of our work in the Cauca region and through his efficient service we completed our labors without the loss in transportation of a single specimen or item of equipment.

In Bogotá, Mr. F. L. Rockwood has acted in a similar capacity for certain small collections acquired since our expedition left that region. For these we have mainly to thank Hermano Apolinar Maria, Director of the admirably arranged museum of the Instituto de la Salle.

Hermano Apolinar has presented us with numbers of specimens, and has secured for us additional specimens of species not satisfactorily represented in our own collections. Notably, *Cistothorus apolinari* and *Asio accipitrinus bogotensis*.

We are also under obligations to Mr. D. C. Stapleton, Mr. Charles Miller, Dr. Hamilton Rice, Gen. Rafael Santos, Sr. Jesus Velez, and Mr. Mervyn S. Palmer.

We should indeed be lacking a sense of appreciation if we did not express our gratitude to the people of Colombia with whom at one time or another and in a thousand nameless ways, we have come in contact. From the peon by the wayside to the owners of haciendas one and all have shown us the most courteous attention.

When traveling through remote, unsettled regions with a valuable outfit and often considerable sums of money, we have felt as safe (possibly safer!) than when in our own homes. When in camp or at hotels, country inns or posadas, we made no special provision for guarding our equipment and supplies; nevertheless, during the five years of our work we did not suffer the loss of a single item by theft. Indeed, on passing through a certain village where one of our party had previously worked, we were stopped by a native bringing a needle and thread which had been left behind!

But especially do I desire, so far as mere words will permit, to pay a tribute to the men with whom it has been my privilege to be associated on our zoölogical explorations in Colombia: To William B. Richardson, Louis A. Fuertes, Leo E. Miller, Arthur A. Allen, George K. Cherrie, Paul G. Howes, Geoffroy O'Connell, Thomas M. Ring, and Howarth Boyle. To their untiring enthusiasm and whole-souled devotion to the Museum's interests may be credited the most valuable collections of birds and mammals which have been brought from any part of South America.

To Richardson, veteran among collectors in tropical America, was given the exceptionally unhealthful stations on the Pacific coast. Here he suffered from fever and from beri-beri, but with the amazing vitality which has carried him through thirty years of exposure to tropical diseases, he continued work when most men would have succumbed.

Miller, a novice on our first expedition, showed such resourcefulness, energy and persistence in overcoming the difficulties which are the necessary accompaniment of collecting in the tropics, that he was subsequently selected as one of the Museum's representatives with the Roosevelt Brazilian Expedition.

His work during the rainy season in the humid Amazonian forests of the Caquetá, where with only unskilled native assistance he secured 830 birds and mammals in 30 days is a feat in tropical collecting; while his ascent of the Paramillo is our most difficult and noteworthy piece of actual exploration in Colombia. On this latter trip he was ably assisted by Howarth Boyle.

Cherrie's extended experience in South America made him an invaluable associate on our trip in the Bogotá region. Particularly effective as a collector he was no less efficient in dealing with those details of transportation and subsistance which form so important a part of field-work in thinly settled regions. He, too, was chosen as a representative of the Museum on the Roosevelt Expedition.

Allen's admirable descriptions of the country which he explored show how well qualified he was for work of this kind, and serve to double our regret that an illness contracted in the unhealthful Chocó region, should have necessitated his return to New York just as he was approaching the most productive part of Colombia.

Howes, O'Connell and Ring made up in enthusiasm what, at first, they lacked in experience, and to them we owe many specimens of birds and mammals which would not otherwise have been obtained.

I am sure that no other member of our various Colombian expeditions will feel that I am giving undue praise to any one member of it when I say that the best qualities each one exhibited were all present in Fuertes. Officially the artist of the expeditions with which he was connected, he filled, in truth, whatever position seemed most to require his attention. In looking for an opportunity to help others, he rivalled Cherrie, while his unbounded enjoyment of the experiences of his associates, as well as his own, made him an ideal companion.

To the fellow-workers who have rendered me assistance in the preparation of this paper, I am indebted no less than to those who have aided us in the field. For the loan of specimens used in comparison, I have to thank Dr. Chas. W. Richmond, of the United States National Museum, Mr. E. W. Nelson, of the Biological Survey, Dr. Witmer Stone, of the Academy of Natural Sciences of Philadelphia, Mr. Outram Bangs, of the Museum of Comparative Zoölogy, Mr. Thomas E. Penard, of Arlington, Mass., Mr. L. A. Fuertes, of Ithaca, N. Y., Mr. W. E. Clyde Todd, of the Carnegie Museum, and Mr. Charles B. Cory, of the Field Museum. Mr. Phanor Eder, author of the authoritative work on Colombia in the Fisher-Unwin series, has supplied me with numerous references to the literature of Colombian exploration and loaned me from his extensive Colombian library, a number of works not elsewhere available. Professor Isaiah Bowman, Director of the American Geographical Society, has given me access to the Colombian maps in his charge, and supplied much of the data on which the map of Colombia accompanying this paper is based.

My assistant, Mr. Waldron DeWitt Miller has given me the benefit of his advice in many knotty problems, and to Mr. David S. Ball and Mrs. Alice K. Fraser, of the Department of Birds, I am also under many obligations. Mr. Ball made the preliminary identifications of the Hummingbirds, while to Mrs. Fraser has fallen the clerical labor, comparison of references, proof-reading, indexing, etc., incident to the preparation of a report of this kind.

Additional assistance of a more specific nature is acknowledged in connection with the instance in which it has been given.

A REVIEW OF COLOMBIAN ORNITHOLOGY.

'Bogotá' Collections.— Eighty years had passed since the publication of the tenth edition of Linnæus' 'Systema Natura' before naturalists began to draw on the ornithological treasures of Colombia which, after eighty years more, are still unexhausted. It was apparently in 1838 or 1839 that a French collector, resident in Bogotá, began to send birds' skins to Paris. These came to the attention of Boissoneau, Lafresnaye, Des Murs and Bourcier, who described many of them as new in the pages of the 'Revue Zoologique' and 'Revue et Magazin.' Native collectors soon learned how to prepare skins which, in increasing numbers, were sent to Paris, and, apparently as early as 1840, reached London, since Fraser described several new 'Bogotá' birds in the Proceedings of the Zoölogical Society for 1840. So large were the shipments of birds from Bogotá that in 1855 Sclater, from whose paper we learn these facts, published in the Proceedings of the Zoölogical Society, a list of 435 species personally known to him from the Bogotá region. Many of these were species of wide distribution, others were migrants from North America, but of the remainder no less than 180 had been described from "New Grenada," as the country was then called, chiefly from the Bogotá region, and of these some seventy were first made known by Lafresnaye. In 1857 (P. Z. S., pp. 15–20) Sclater published an addendum which added 52 species to his previous list making 487 which at that time were known from the Bogotá region.

Since that date hundreds of thousands, possibly even millions, of birds, collected primarily for millinery purposes, have been shipped from Bogotá, in the main to London and Paris. This trade probably reached its maximum about 1885, when the fashion of wearing small birds on hats was at its height, but with a change in style which created a demand for the

Bogotá and in the Llanos to the east by T. H. Wheeler, but apparently no special report has appeared on this gentleman's labors, and I am unaware of their scope, but it seems probable that many of his specimens were collected by natives. In 1899 Dr. Witmer Stone published a report (Proc. Acad. N. S. Phila., 1899, pp. 302–313) on some 77 species collected by Dr. J. W. Detwiler, chiefly from Honda to Ibagüe, and this short paper appears to be the only one which has been issued on scientifically collected birds from the Bogotá region; but even this collection evidently contains many native-made skins.

There are doubtless few regions in the world where accuracy in labeling specimens is of more importance than in that area whence came the so-called 'Bogotá' skins. In its most restricted sense this area, extending from the Magdalena Valley on the west to the base of the Andes on the east, contains four life-zones and two distinct basal faunas. While a dataless specimen may help indicate the character of the bird-life of the region as a whole, it throws no light on faunal or zonal limits or on geographic variation under the strikingly different environmental conditions which prevail in this part of Colombia. Not only does the absence of data, particularly of altitude, make Bogotá skins of no value in determining the limits of zones and faunas, but in many instances it has been discovered by comparison with fresh material, that the old, native-made skins have undergone so striking a change in color that they fail to represent properly the species to which they belong, and for purposes of exact comparison they are therefore not only worthless but misleading.

I shall make no attempt to list in detail the many papers consisting merely of descriptions of new birds based on Bogotá skins. Our own brief explorations show that new species are still to be found in sight of the city of Bogotá itself, and for many years there will no doubt continue to be additions to the list of recognized species to which the type-locality 'Bogota' is ascribed.

The Limits of the 'Bogotá' Region.— While the known ranges of the birds contained in even the earliest Bogotá collections make it evident that the native collectors worked at comparatively great distances from the city of Bogotá, so far as I am aware no definite information of the regions visited by them has been published. The following facts were gathered from dealers and collectors in the city of Bogotá during our seventh Colombian expedition:

The majority of the birds' skins brought in by natives are collected by them within twenty-five miles of the city. Fusugasugá to the south, Anolaima, at the border of the Subtropical and Tropical Zones, to the northwest, and Choachi and Fómeque on the eastern slope of the first range of the Andes east of Bogotá, are localities from which many specimens are now received.

At a greater distance, the region about Villavicencio has supplied a vast number of skins. This city is the gateway of the trail to Bogotá toward which, in default of an eastern outlet, the current of trade from the Llanos flows. Villavicencio thus draws on the region east to the Casanare, and south and east to the rubber producing forests of Amazonian Colombia.

Transportation facilities and commercial relationships, therefore, make Bogotá the market for the products of the vast region lying to the east of it, and for this reason eastern Colombia has supplied a far greater number of birds' skins than the region west of Bogotá, where transportation to the marts of the world may be secured without the passage through Bogotá required by the products of the east.

Nevertheless, the demand for skins by the Bogotá dealers has brought specimens from as far north as southern Santander, from west at least as far as Ibagüe at the entrance to the Quindio trail over the Central Andes,[1] and as far south as the head of the Magdalena Valley at San Agustin. It was here, that in April, 1912, Leo E. Miller found a native collecting with his blow-gun about forty Hummingbirds a day for a Bogotá dealer, as above related.

It is apparent, therefore, that in exploring the Andes from base to summit and working both to the east and west of the Eastern Range, the Bogotá collectors have pursued their calling in four life-zones and two quite unlike faunas. Nevertheless, for the past seventy-odd years, ornithologists have used these Bogotá specimens in defining the characters and distribution of birds without knowing whether they came from the Magdalena Valley or the headwaters of the Meta, from the Tropic or the Temperate Zone.

Even when used in a broad sense, the locality 'Bogotá' has come to have a far more definite meaning than, in view of the facts above recorded, should be given it. With the wider-ranging species it is obvious that Bogotá collections may contain specimens from far separated localities, and, in default of labels, it is often impossible to distinguish between geographic and individual variation.

In a number of instances our collections show that birds inhabiting both the western and eastern slope of the Eastern Andes, which have been supposed to represent one form, belong in fact to two, while in the case of the House Wren no less than three forms occupy the area which the most recent reviser of this group believed to be occupied by one.

It seems not improbable that the least-known portion of the restricted

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[1] The type of *Chamæpetes g. goudoti* came from this region.

Bogotá region is the Savanna of Bogotá itself. The comparatively limited number of birds found in this area has made it an unfavorable spot for the resident collectors who have, naturally, been more attracted by the richer avifauna of forested humid regions. Doubtless for this reason some of the commonest of true Bogotá species are comparatively rare in Bogotá collections.

During one morning I shot the types of new races of the Least Bittern, Short-eared Owl, and Yellow-headed Blackbird at Suba, within sight of the city. At the same locality Hermano Apolinar Maria secured for us specimens of distinct forms of *Cistothorus* and *Habrura*, genera which had not been previously reported from the Bogotá region. The Coot (*Fulica*) of the Savanna also proves to be a well-marked, undescribed form which has doubtless escaped the attention of earlier writers because of lack of material.

The forested portion of the Magdalena Valley, from La Dorada northward, seems to have been but little visited by the Bogotá collectors who prefer the more healthful localities in the mountains to the hot, fever-infested river bottoms.

Claude Wyatt's Explorations.— Aside from the native collections and the few birds secured by Wheeler and Detwiler, we have only three other sources of information concerning the bird-life of the Eastern Andes and country at their base. In January, February and March, 1870, Mr. Claude Wyatt made an ornithological reconnaissance in Santander. He left the Magdalena River at Puerto Nacional and proceeded thence by mule through Ocaña, La Cruz and Cocuta Suratá to Bucaramanga. From this point he ascended to the Paramo of Pamplona and returned to the Magdalena near what is now Puerto Wilches. He gives an excellent description of the country traversed, and the accurate data as regards locality and altitude at which he secured specimens of the 210 species he lists, makes his paper (Ibis, 1871, p. 113 *et seq.*) one of real scientific value.

Berlepsch on a Bucaramanga Collection.— In 1884 Count von Berlepsch published in the Journal für Ornithologie (pp. 273–320) a report on a collection of some 800 bird skins, representing 150 species, which was sent him from Bucaramanga. These skins were made by natives and were without data. It is probable that they came from the country immediately surrounding Bucaramanga, but beyond indicating in a general way the faunal affinity of this region with that of Bogotá, the collection possesses little value for distributional problems.

Wirt Robinson on the Magdalena:— In 1895, Lieutenant (now Colonel) Wirt Robinson published a list of ninety-one species collected or observed by himself and his brother on a trip from Barranquilla up the Magdalena to Honda and thence to Guaduas, distant a day's journey on the road to

Bogotá. He returned to Barranquilla over the same route. The expedition occupied but a month (June 20–July 21) and afforded neither time nor opportunity for much field work. Nevertheless, the daily record of birds observed tells us what species enter into the everyday bird-life of this part of Colombia, and the records, as far as they go, are definite. It is to be regretted that Col. Robinson did not continue his journey to El Vergel, but two hours beyond Guaduas, where he would have found first-growth forest and an interesting fauna.

Salmon's Collections in Antioquia.— Proceeding to the west, we shall find that beyond the occasional mention of specimens secured by native collectors on the 'Quindiu' and in 'Antioquia', our exact knowledge of the bird-life of central Colombia has rested solely on the collections made by T. K. Salmon in the Department of Antioquia. These were reported on by Sclater and Salvin (P. Z. S., 1879, pp. 486–550) in a list of 468 species represented by about 3500 specimens.

Salmon was an Englishman in the employ of the Colombian Government and lived at Medellin. His collections were made between 1872 and 1878, chiefly at and near Medellin, but he also visited the country as far west as Frontino, Antioquia, and Concordia, and as far south as Jerico, while to the north and east he reached Remedios, in the Tropical Zone, on the headwaters of the Ité, which flows into the Magdalena. His field, therefore, extended from the eastern border of the Atrato, to the western border of the Magdalena Valleys.

The locality "Sta. Elena" which appears so often in Sclater and Salvin's list, and which they were unable definitely to locate, is situated a few miles east of Medellin, on the summit of the first ridge of the Central Andes between that city and the Magdalena Valley.

Salmon was the first naturalist to make anything approaching a complete collection of the birds of a stated area in Colombia and his work is of high importance. Where his localities are not on or near the boundaries of life-zones the data accompanying his specimens are sufficient. His records from Remedios, for example, a station wholly in the Tropical Zone (alt. 2360 ft.) and at some distance from altitudes of sufficient height to support life of the succeeding or Subtropical Zone, are of much significance and give us our first, and, until the present time, practically only knowledge of the extension of Pacific coast forms into the Magdalena Valley. From Remedios, for example, Sclater and Salvin record *Cyphorhinus phæocephalus, Thryophilus nigricapillus, Orthogonys olivaceus,* and *Capito maculicoronatus.* When, however, his collections were made at localities where the precipitous nature of the ground and height of the mountains produced marked changes in altitude within short distances, Salmon evidently failed to appreciate the necessity for exactness in labeling and his data, as published, are therefore most misleading. To illustrate: from "Sta. Elena" Sclater and Salvin record among the Wrens alone, *Thryophilus nigricapillus, Thryothorus mystacalis,* and *Cinnicerthia unibrunnea,* species which, respectively, are characteristic of the Tropical, Subtropical, and Temperate Zones and whose occurrence at one place, therefore, would be as remarkable as the successful cultivation of cacao and wheat in adjoining fields!

Many similar instances could be given; thus *Troglodytes solstitialis,* a species of the Temperate Zone, is recorded from "Nechi" (*sic*), a locality in the Tropical Zone, and this inaccuracy destroys, in a measure, the value of the paper for distributional purposes. Taken, however, with what we have learned of the zonal distribution of Colombian birds, and particularly in connection with Miller and Boyle's work (Expedition No. 8), Salmon's paper gives us an excellent understanding of the avifauna of Antioquia. His notes on nesting-habits and carefully made collection of nests and eggs form a noteworthy contribution to our limited knowledge of the life-histories of Colombian birds.

Delattre in Western Colombia.— In western Colombia small ornithological collections were made at least as early as 1846, when Delattre and Bourcier published in the Revue Zoologique descriptions of new Hummingbirds secured by the first-named author on a journey from Buenaventura through Juntas (= Cisneros) to Cali, Popayan and Pasto. Other birds collected by Delattre were described by Lafresnaye, but the total number of specimens secured by this early French traveller does not appear to have been very large.

The Michler Expedition to the Atrato.— Our first real knowledge of the character of Colombia's Pacific coast avifauna we owe to Chas. J. Wood and Wm. S. Wood, Jr., who, as naturalists of the expedition under Lieut. Michler to discover a possible route for a canal from the lower Atrato to the Pacific, made a collection representing 144 species of birds on the lower Atrato, the Truando, and Nercua Rivers. This collection was reported on by Cassin in the Proceedings of the Academy of Natural Sciences of Philadelphia for 1860 (pp. 132–144, 188–197), and his paper still remains practically our only source of information of the bird-life of this part of Colombia. Of the four new species therein described by him, *Pittasoma michleri,* type of a new genus, is the most noteworthy.

Sundry West Colombian Collectors.— In 1894, we learn from Hellmayr (P. Z. S., 1911, p. 1084), W. F. Rosenberg visited the region east of Buenaventura working chiefly at Juntas and Cali. His birds went to the late Adolphe Boucard, who published a list of the Hummingbirds in 'The Hummingbird' (Vol. V, 1895, pp. 5–7) but the bulk of the collection was never reported on. In 1896 and 1897, Hellmayr writes, Gustav Hopke "sent a fair series" from the same district to Count Berlepsch who described several new species in the Ornithologische Monatsberichte, Vol. V, 1897, pp. 173–176, and in Ornis, XIV, Feb. 1907, pp. 347, 361, 365. Mr. Eugene Andre, in 1899, Hellmayr continues, "forwarded a large collection of birds from the environs of Buenaventura and western slope of the Andes above that town, to Comte de Dalmas of Paris. Unfortunately, the greater part of it was subsequently destroyed by accident, and merely a list of Trochilidæ, by Messrs. Simon and de Dalmas (Ornis, XI, 1901, pp. 216–224)," is the only publication it produced.

In February, 1898, Walter Goodfellow and Claud Hamilton landed at Buenaventura and traveled thence to Cali whence they proceeded, *via* Popayan, the Patia Valley, Pasto, etc., to Quito. Such collections as were made in Colombia were lost in transit, but Goodfellow's report (Ibis, 1901, pp. 300–319; 458–480; 699–715; 1902, pp. 59–67; 207–233) on collections subsequently made in Ecuador, contains an interesting description of the journey through Colombia with occasional observations on the birds observed.

Mervyn G. Palmer's Collections.— Prior to 1910, the most important collections of west Colombian birds, however, have been made by Mervyn G. Palmer who collected in the region between Buenaventura and Cali in 1907 and 1908 and on the Upper San Juan and its sources in the latter part of 1908 and 1909.

The birds believed to be new in the first-named collections were described by Outram Bangs in the Proceedings of the Biological Society of Washington for 1908 (pp. 157–161) and 1910 (pp. 71–76), but the main collection has not yet been reported on.

The San Juan collection, numbering some 700 specimens of 201 species, fortunately fell into the hands of Hellmayr whose paper on this material (P. Z. S., 1911, pp. 1084–1213), prepared with an exceptionally wide knowledge of South American birds, is, if not the most extensive, at least the most satisfactory treatise on the birds of any part of Colombia with which I am familiar.

From June 19 to July 2, 1904, W. W. Brown, Jr., representing John E. Thayer, collected vertebrates on Gorgona Island, which lies some thirteen miles off the shore of southwestern Colombia. Birds were rare both in species and individuals, examples of only fourteen species being secured. These with two others are reported on by Thayer and Bangs (Bull. Mus. Comp. Zoöl., XLVI, 1905, pp. 91–98) who describe as new *Sula etesiaca, Urubitinga subtilis, Thamnophilus gorgonæ, Cyanerpes gigas,* and *Cœreba gorgonæ.*

The Santa Marta Region.— The Santa Marta mountains, because their isolation and altitude promised biological results of exceptional interest, have received more attention from exploring ornithologists than any other part of Colombia.

They were first visited by F. Simons who, in 1878 and 1879, worked from sea-level to as high as 17,000 feet, and on both northern and southern slopes. His collections of 182 species formed the basis of papers by Salvin and Godman in 'The Ibis' for 1879 (pp. 196–206) and 1880 (pp. 114–125, 169–178).

Simons was followed by the well-known American collector, W. W. Brown, who, in the interests of E. A. and O. Bangs, collected during the years 1897–99, approximately 2500 specimens representing some 242 species. A series of papers based on this collection was published by Outram Bangs in the Proceedings of the Biological Society of Washington, and of the New England Zoölogical Club.

Before Brown had left the region Herbert Smith entered it in charge of a party which planned to make a thorough study of its fauna. A serious illness and prolonged revolution so interfered with Smith's plans that he did little work above the Subtropical Zone. His collections, numbering nearly 3000 specimens representing 304 species, were purchased by the American Museum of Natural History and were reported on by J. A. Allen in the Bulletin of the American Museum for 1900 (pp. 117–183). Dr. Allen includes in this paper references to the 84 species secured by Simons and Brown but not by Smith, bringing the total number of birds known from the Santa Marta region up to 388.

Since the year 1911, M. A. Carriker, Jr., who has had prolonged experience in the American tropics, has been resident in the San Lorenzo mountains of the Santa Marta group and in the adjoining country, where he has made large collections of birds for the Carnegie Museum. W. E. Clyde Todd has described some of the species secured, and it is to be hoped that we may have a résumé of our knowledge of the exceptionally interesting bird-life of this group of mountains in which Carriker's field studies may be employed to map its zones and faunas. No other part of the Andes has received such long continued attention from a trained collector.

It appears, therefore, that aside from the Santa Marta group, and omitting reference to 'Bogotá' skins as of no value in an attempt to determine with exactness the boundaries of life-zones and faunal areas, our knowledge of Colombian birds rests, in the main, on Wyatt's three months' explorations in the Eastern Andes of Santander, Salmon's extensive collections in Antioquia, the work of the Michler expedition in the lower Atrato, and of Palmer on the San Juan and Pacific slope west of Buenaventura. It is obvious then, in view of these facts and the extent and topographic diversity of the area to be covered, that we had before us a task of some magnitude when, in November, 1910, we began our field-work in Colombia.

THE AMERICAN MUSEUM'S EXPEDITIONS IN COLOMBIA.

In planning our field-work in Colombia we experienced much difficulty in securing definite information concerning means of transportation, routes, and the character of the country we proposed to visit.

Aside from the use of the railways from Buenaventura to Caldas and Puerto Colombia to Barranquilla, and La Dorada to Honda, and of steamers and launches on the San Juan, Cauca, and Magdalena rivers, our work in Colombia has of necessity been conducted solely with the aid of pack animals and porters. Such limited transportation facilities in a country where topography and climate further add to the difficulties of travel, imply a lack of intercommunication between regions which, although contiguous, are separated by high mountain ranges with but few passes.

We should not therefore, have been surprised often to find it impossible to learn from the inhabitants of one district even the most salient features of what to us seemed comparatively nearby districts.

For this reason it has seemed to me to be desirable to publish at some length the itinerary of each of our eight expeditions in Colombia with a general description of the routes followed and stations at which collections were made. This information is presented not only for its bearing in the present connection, but as a contribution to Colombian geography.

Miller and Richardson in the Andes west of Popayan, Miller and Allen in the Paramo of Santa Isabel and in crossing from Cartago to Nóvita and Popayan to San Agustin; Miller in the Caquetá region and with Boyle on the Paramillo, have visited regions about which little or nothing has been published; while the narrative of those expeditions which followed more beaten trails, may have a practical value to those who, for whatever purpose, follow in our footsteps.

That our explorations may be extended to advantage, is beyond question, for there still exist large areas in Colombia of which we know but little or nothing. The bird-life of Amazonian Colombia, probably richer than that of any other part of the republic, is known to us only through the results of Miller's one month's collecting in the Caquetá region; in the Llanos proper there has been no scientific collecting; the character of the bird-life of the northern end of the Eastern Andes we know only by inference; no collections have been made in the Goajira Peninsula, and but few specimens have been recorded from the arid coastal region west of the Magdalena. The great Magdalena forests are still but imperfectly explored; the Central Andes south of Antioquia have been visited only by our expeditions; even the ornis of the Cauca Valley, as elsewhere stated, is not

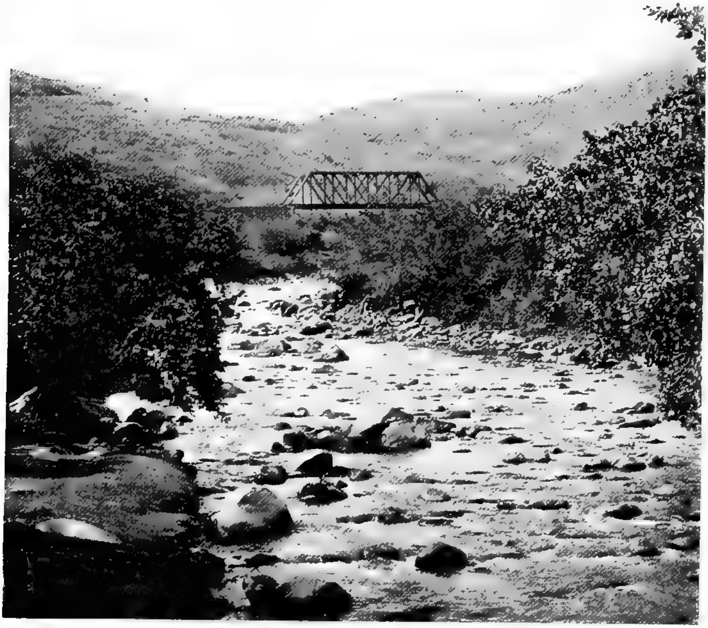


Fig. 1. THE UPPER DAGUA NEAR CALDAS
(Tropical Zone; arid portion of the Cauca-Magdalena Fauna.)

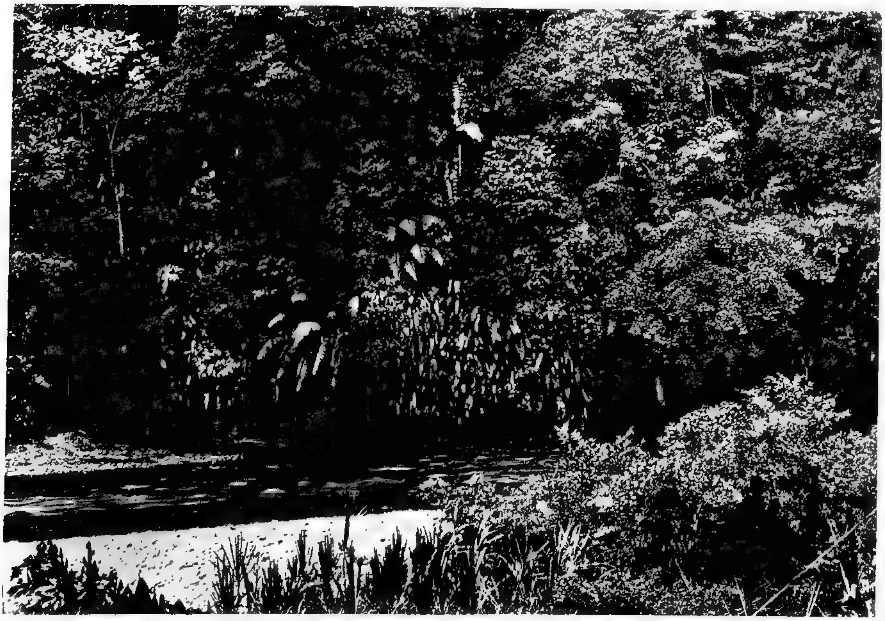


Fig. 2. THE LOWER DAGUA
(Tropical Zone; Colombian-Pacific Fauna.)

satisfactorily known. Miller and Allen in their rapid crossing from Cartago to Nóvita took species not found by us elsewhere, while work in Tatamá Mountain and Cerro Torra in this region, the 'Paramo' of Frontino to the north, and Farallones of Cali to the south, would be certain to yield valuable results.

The Patia Valley with its unique tropical connection with the Pacific coast, offers an unusual problem in zoögeography, while the Pacific coast itself is ornithologically unknown from the Patia to the San Juan rivers. Particularly, would I call attention to the need of further exploration in the Chocó region, and especially in the Baudó range and mountains on the Panama frontier.

Expedition No. 1. Buenaventura to the Cauca Valley; Reconnaissance, Cali to Giradot over the Quindio Pass. November 10, 1910–June 4, 1911.

Personnel.— Frank M. Chapman, Louis A. Fuertes, Wm. B. Richardson, Leo E. Miller.

Itinerary.— Richardson reached Buenaventura on the Pacific coast, alone, on November 9, and proceeded at once to Caldas (alt. 2560 ft.) distant forty miles at the end of the railway under construction from Buenaventura to Cali. He remained at Caldas until November 24, and thence retraced his steps some fifteen miles to San José (alt. 600 ft.) collecting there from November 27 to December 18. On the last-named date he left for Cali, at the eastern foot of the Western Andes, and this large, attractive city became our base of operations for the succeeding year. Collections were made about Cali until December 31, when Richardson moved to the mouth of the pass (alt. 6600 ft.) in the Western Andes, 3100 feet above the town, and established himself at a wayside posada surrounded by forest. This locality is known as Las Cruces, from three large crosses which mark the divide, and also as San Antonio, from a small settlement just below the pass on the trail to Cali. It was at this point that Mervyn G. Palmer made part of the important collections purchased by Mr. Bangs; and at El Tigre, a ranch about 1500 feet below the divide and to the west, Eugene Andre collected.

February 26, Richardson moved from San Antonio to Las Lomitas (alt. about 5000 ft.), a ranch on the Pacific slope some five miles to the northwest, and worked there until March 7.

In order to be near the coast while awaiting the arrival of the remainder of the expedition, Richardson went to Los Cisneros (alt. 900 ft), also known as Juntas, at the junction of the Dagua and Las Petitas rivers, and the head of canoe navigation on the first-named stream, and remained there until March 21. Two days later he reached Buenaventura where he was joined by Chapman, Fuertes and Miller.

The whole party now went to Cali, and after depositing there a large part of their equipment and supplies, established themselves, March 29, very comfortably in a bungalow at San Antonio, immediately below the forest which crowns the crest of the mountain. The collections made by us here in connection with those of Palmer, are believed to contain a large proportion of the birds which occur in this locality.

April 8 we returned to Cali and on the 11th reached the sugar estate of La Manuelita in the Cauca Valley, some five miles north of Palmira. Here we were the guests of Mr. Charles J. Eder until the 18th, when with pack animals supplied by Mr. Eder, we moved to his bungalow, Miraflores, situated on the western slope of the Central Andes, about 3000 feet above the valley, or at an elevation of some 6100 feet.

May 1, Mr. Eder sent mules for us and, after a night at La Manuelita, we crossed the valley to Cali by way of Florida and Guengüe, stopping at the last-named ranch two days and reaching Cali on May 7.

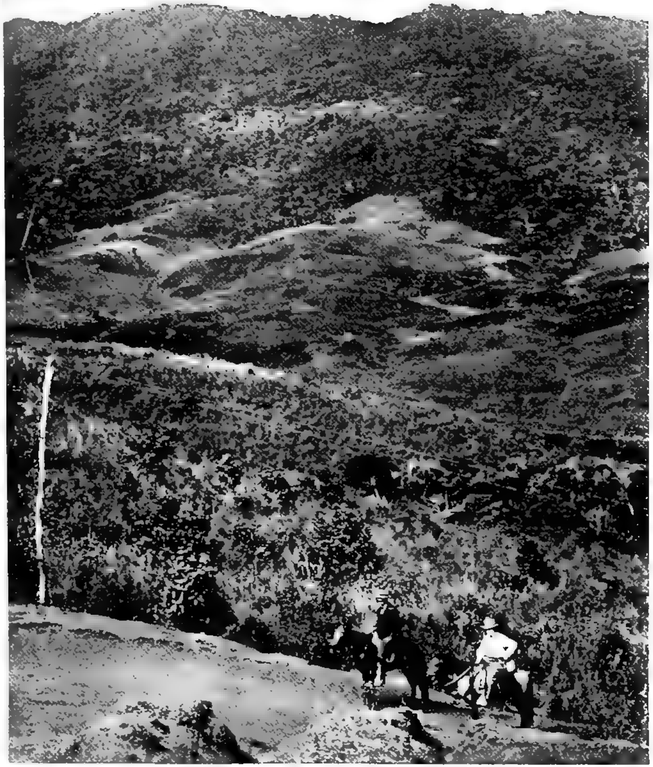
Some collecting was now done in the marshes of the Cauca River near Juanchito, the port of Cali. Fuertes secured here our first specimen of *Aythya nationi,* a practical rediscovery of the species previously known only from a pair taken at Lima, Peru.

May 13, Fuertes and Chapman began their return journey to New York in a reconnaissance down the Cauca to Cartago, thence over the Quindio Pass to Giradot on the Magdalena, and down that river to Barranquilla, which was reached June 4.

On the same date Miller and Richardson left on an expedition to the Andes west of Popayan.

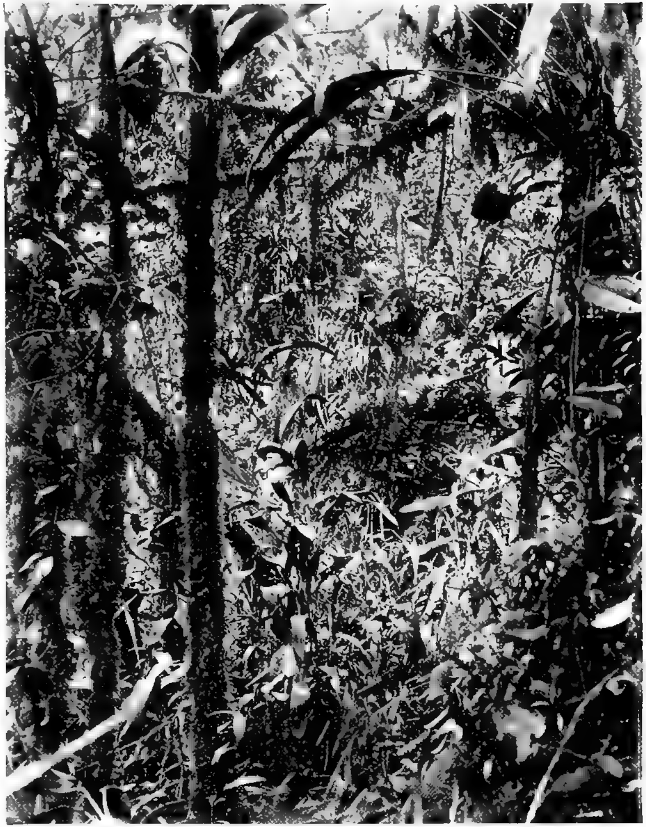
On the whole, the work of this first expedition is believed to have given us a fair idea of the avifauna of the region covered. We regret now, however, that no attempt was made to reach the Farallones of Cali, the highest point in the Western Andes, between the summit of the Micai Trail, west of Popayan, and the Citará of Antioquia. With an altitude of between 9000 and 10,000 feet, it is possible that we might have found there some species of the Temperate Zone. Our Cauca Valley collections would also have been more satisfactory if we had explored a tract of primeval forest between Cali and Florida.

Description of Route and Collecting Stations.— The rainfall of the Pacific slope of Colombia is phenomenal. It has been known to reach 400 inches in one year at San José (see beyond). There is no dry season on the Pacific coast and it rains almost daily in this intensely humid belt.



ROAD BETWEEN CALDAS AND SAN ANTONIO

Note the lower limit of the subtropical forest which covers the crest and upper western slopes of the Western Andes.
(Tropical Zone; arid portion of the Cauca-Magdalena Fauna.)



FOREST AT SAN ANTONIO

The moss-encased tree-trunks indicate the extreme humidity.
The figure of a boy at the left of center gives some conception of scale.
(Subtropical Zone; West Andean Fauna.)

As a natural consequence the region is, as a rule, densely forested from the very margin of the sea to the summit of the Western Andes. Buenaventura lies at the head of the bay of the same name, some fourteen miles from the sea. The shores here are lined with mangroves, and numerous small streams and estuaries make a network of mangrove-bordered waterways.

Buenaventura to Caldas.— Shortly after leaving Buenaventura, on the railway to Caldas, one reaches higher ground and enters the true coastal forest. The trees are not of great height but the growth is luxuriant in the extreme, the floor of the forest as well as limbs of trees being covered with vegetation, making progress off trails or clearings impossible without the aid of a machete. Richardson, who collected in this coastal forest at San José and Cisneros, considered it the most difficult ground to work he had encountered in a field experience of twenty-five years in the tropics. The density of the vegetation limits one's radius of action and makes it difficult to shoot birds as well as to find them when shot; the high degree of humidity prevents them from drying properly, while the abundance of mosquitoes, as well as of other insect pests, makes the region extremely trying and unhealthful. Both Richardson and his native assistant suffered severely from fevers acquired in this low coast region, the avifauna of which is still far from exhausted.

The Caldas Basin.— A short distance east of Cisneros, and some 1500 feet above it, the railroad, still following the shores of the Dagua, passes through a narrow cañon worn by the river, and emerges in a surprisingly arid basin or pocket in which lies the settlement of Caldas (alt. 2560 feet). The floor of the valley, and at least lower slopes of the hills by which it is surrounded, are covered with short grasses with occasional stands of low cactus, acacia-like trees and agaves. The abrupt change in climate, indicated by the striking difference in the vegetation of Cisneros and Caldas, is evidently due to the presence of a ridge at the western border of the Caldas Valley of sufficient height to protect the area lying east of it from the prevailing western winds and, consequently, from receiving a share of the moisture they carry. A part of this moisture is given up as the air-currents strike the Pacific slope of the ridge which borders the Caldas basin on the west, with the resulting heavy rainfall of the western slope. In passing over or pouring down into the valley at Caldas, the temperature of the air is doubtless raised rather than lowered and its moisture-carrying capacity correspondingly increased. Consequently, further condensation does not occur until the higher mountains to the east are reached, and with the increase in rainfall the forests reappear.

This treeless depression or valley on the Pacific slope of the Western

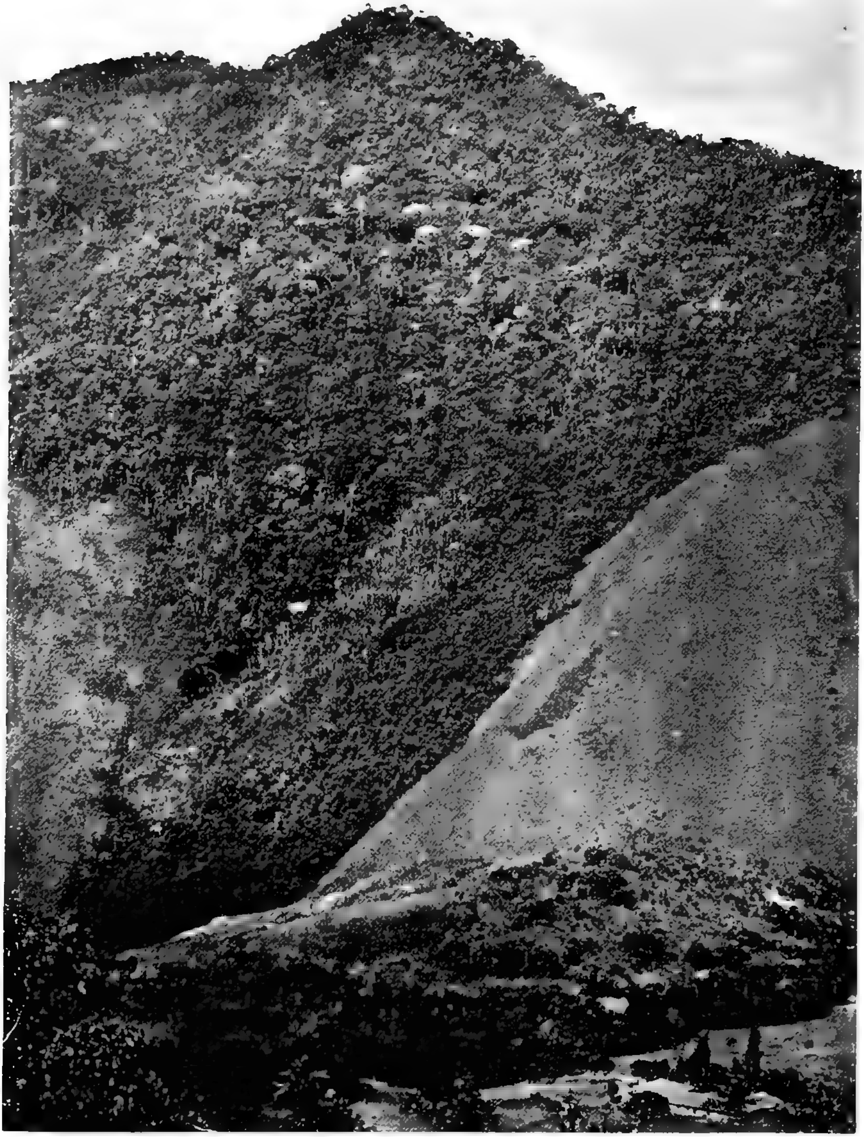
Andes is therefore surrounded by forest and the character and origin of its fauna is hence of much interest. It apparently cannot be derived from the humid, heavily wooded slopes above or below it, and the height of the mountains to the east is presumably sufficient to separate it from the faunally similar Cauca Valley. Nevertheless, its bird-life has evidently been derived from that valley. When, however, one observes that owing to the aridity of the eastern slope of the Western Andes the Tropical Zone ascends nearly to the San Antonio pass, it is clear that the Tropical Zones of the Caldas and Cauca Valleys are separated only by the narrow belt of timber which crowns the San Antonio pass. Hence we have numerous Cauca Valley species occurring at Caldas but apparently not elsewhere on the Pacific slope in this section.

Caldas to San Antonio.— At Caldas the trail leaves the banks of the Dagua and winds gently up the slope toward the San Antonio pass. At an altitude of 5700 feet we entered the clouds and, at the same time, the lower border of the cloud forest which characterizes the Subtropical Zone. The Caldas region now appeared as a treeless depression surrounded by forest-crowned mountains. Everywhere the tree-line was as sharply defined as in a fresh clearing. The cloud-line coincided with the tree-line. Cloudless hilltops were bare of trees.

The luxuriant forest of the Subtropical Zone continues to the summit of the ridge and as far over it as the cloud's-cap itself. Normally, this is not more than a few hundred feet, but when ravines or barrancas slope down toward the Cauca Valley the water they carry leads the forest to a much lower level than it reaches without the encouragement of such natural irrigation. These wooded barrancas are separated by grass-grown ridges of the treeless eastern slope of the Western Andes. These ridges carry a limited number of species of the Tropical Zone upward almost to the San Antonio pass, just as the forest's arms stretching down the barrancas carry some Subtropical Zone species well below the upper limits of the Tropical Zone. The result is an inosculation of faunas occasioned by causes which are obvious enough when seen, but which the most accurately labeled specimens would not reveal.

The crest of the range is here so narrow that the descent into the Cauca Valley begins almost where the ascent from the Pacific ends. One has to go only a few hundred feet below the divide to pass from the forest into a low, scrubby growth which quickly gives way to the brown, treeless slopes leading down to the Cauca Valley.

Most of our collecting in this vicinity was done in the forests, but occasionally work was done along its border and here certain tropical species were secured, a fact which accounts for their being recorded from a locality which in reality is in the Subtropical Zone.



EASTERN SIDE OF WESTERN ANDES FROM SAN ANTONIO

Note descent of forest down a drainage ravine and ascent of arid zone of the Cauca Valley up a treeless shoulder of the range.

(Interdigitation of Tropical and Subtropical Zones and West Andean Fauna with arid portion of the Cauca-Magdalena Fauna.)

The Cauca Valley near Cali.— The Cauca Valley from Cali to Cartago has a uniform altitude of 3500 feet and an average width of possibly twenty-five miles.

The rainfall is not high, ranging from thirty-five to fifty inches, and forests apparently occur only where they receive natural subsurface irrigation from the mountain slopes. The Cauca River, which is navigable for small steamers from Cali to Cartago, except during very dry seasons, is bordered by marshes, bamboo thickets and savannas and, in places, by heavy forests. Approaching the mountains, on each side, dryer savannas with acacias and large tracts of grazing and cultivatable land predominate and extend to the bare, rounded foot-hills which lead upward to the lower borders of the cloud forest of the Subtropical Zone.

About Cali we collected in the savannas and marshes; at La Manuelita in the pastures, cacao groves and fallow fields grown with scrub and bordered by trees. At neither place did we find first-growth forests such as exist in the vicinity of Guengüe east of Florida, where, however, circumstances shortened our stay. Miller and Allen later collected in primeval forest at Rio Frio, but I feel that more work could be done to advantage in the forests of the valley.

The Central Andes above Palmira.— Our location at Miraflores (alt. 6200 ft.) on the western slope of the Central Andes above Palmira, was much like that in which we had lived at San Antonio. The comfortable bungalow which Mr. Eder so kindly placed at our disposal is situated near the junction of the Tropical and Subtropical Zones. Above us was the lower border of the luxuriant subtropical forest; below, the bush-grown or bare hills leading to the valley. If, therefore, we went down the trail we encountered chiefly tropical forms but if we climbed upward we were soon among the birds of the subtropics. Where the change in fauna also implied change in haunt the difference between the bird-life below and above our home seemed natural. Thus Ground Doves and Seedeaters were to be expected in the open grassy country toward the valley, just as Tanagers and Trogons were to be looked for in the forests higher up the mountain side. When, however, in the belt of timber bordering the Amina River, a thousand or fifteen-hundred feet further down, one found *Ostinops decumanus*, a strictly tropical species, and in not dissimilar haunts a few hundred feet above the bungalow, encountered *Ostinops salmoni* a strictly subtropical species, one was more impressed by the influence of temperature in determining life-zones.

The summit of the ridge on which Miraflores is situated has an altitude of 8000 feet, and the forest growth increases in luxuriance as one mounts toward the crest. Nowhere have I seen a greater profusion of creepers, parasitic and epiphytic growth. Tree ferns here were estimated to reach a height of fifty feet.

The crest of the ridge is narrow and about 150 feet down the eastern slope the character of the forest changed completely. Tree ferns, parasites, and epiphytes largely disappeared and trees with small leaves replaced the cecropias and other large-leaved species of the western and more humid slope. There was little undergrowth and the woods bore a general resemblance to an open beech forest.

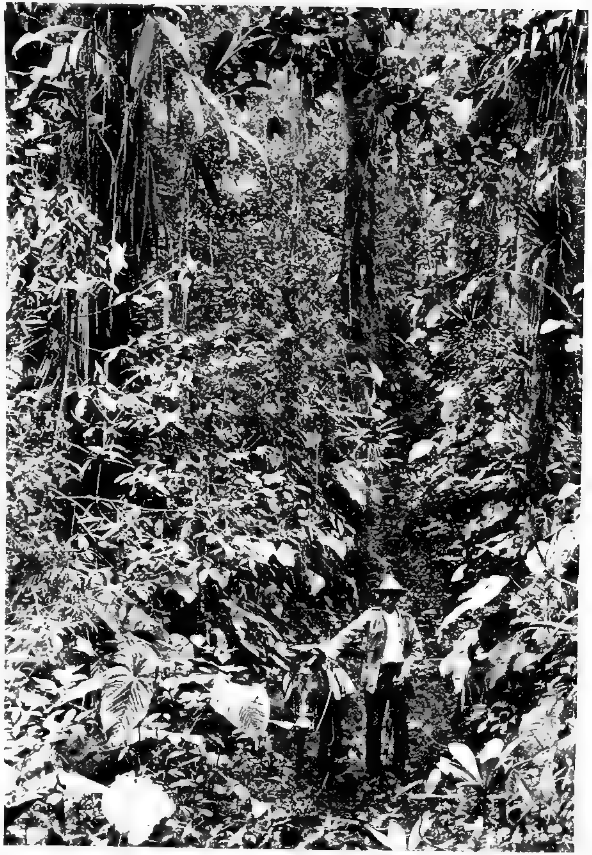
This growth persisted to the shores of a fair-sized stream at the bottom of an almost V-shaped valley, 1400 feet below and west of the summit of the ridge to the west. The succeeding ridge, or east wall of the valley, is of apparently the same height as the first ridge and is densely wooded to its summit. The trail, however, did not extend beyond the bottom of the valley and we made no attempt to explore the uninhabited mountains to the east.

THE RECONNAISSANCE OVER THE QUINDIO.

Cali to Cartago.— The journey from Juanchito, the port of Cali, to Cartago was made by steamer on the Cauca River. The river is narrow enough (averaging one hundred and fifty to two hundred yards in width) to permit one to see the details of both banks; the water was high, the current about three miles an hour. The distance in an air-line between Cali and Cartago is ninety miles, by the river 172 miles; but if the winding course of the steamer increases the length of the journey, it also adds to the charm of it.

The Cauca flows on the western side of the valley, its waters occasionally washing the foothills of the Western Andes. The country through which it passes is most diversified and attractive. Broad marshes flanked by dryer savannas, bamboo forests, patches of plumed wild cane, cacao groves and stretches of plantains near the small settlements or ports of the larger towns which, like Cali, were some miles from the river, made a pleasing and varied panorama of river scenery. Later we encountered heavy, primeval, bottomland forest, such as surrounds the port of Rio Frio, selected as a locality for subsequent investigation by Miller and Allen. These forests, however, are not to be compared in extent to those which border the Magdalena River, for example, and are doubtless limited to areas where they receive sufficient subsurface irrigation to nourish them.

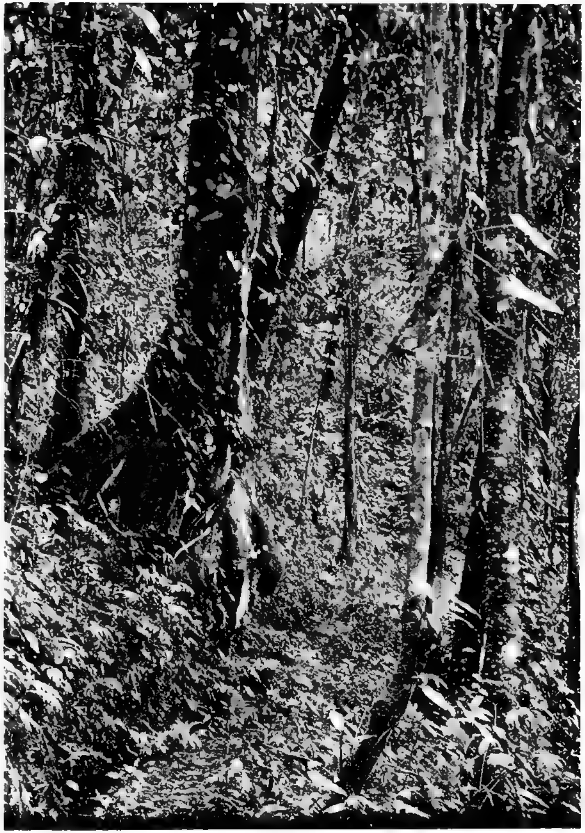
Large White and Snowy Egrets, the latter much the less common, Gray-green and Night Herons, Wood Ibis, Roseate Spoonbills, Cormorants, Jacanas, Pigeons (*Columba rufina*) a few Ducks, including an occasional Muscovy, and Cassiques (*Ostinops decumanus*) were the birds most commonly seen from the steamer, while mammals were represented



WESTERN SLOPE OF OUTER RIDGE OF CENTRAL ANDES ABOVE MIRAFLORES (ALT. 8,000 FT.)

The prevailing winds are westerly; there is heavy precipitation and luxuriant vegetation.

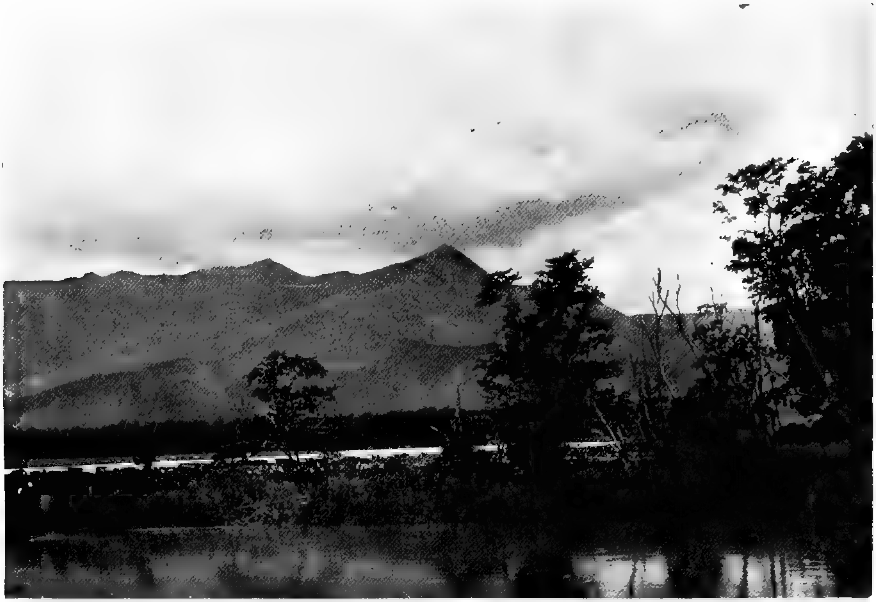
(Subtropical Zone; West Andean Fauna.)



EASTERN SLOPE OF SAME RIDGE AS PRECEDING AT SAME ALTITUDE

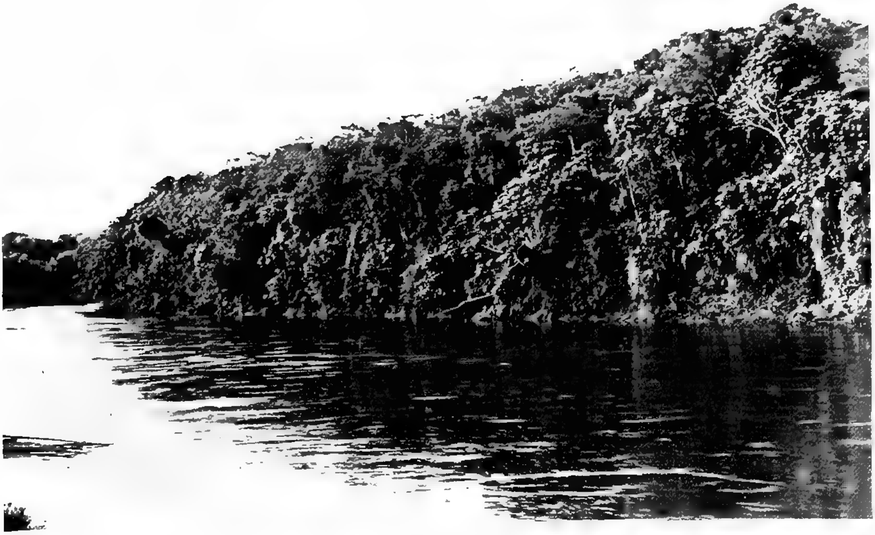
The forest is more open, with comparatively little parasitic growth; evidently indicating decreased rainfall following unfavorable slope exposure.

(Subtropical Zone; West Andean Fauna.)



CAUCA RIVER NEAR BUGA

Note the treeless eastern slopes of the Western Andes. A flock of white Herons is feeding on the marsh.
(Tropical Zone; arid portion of Cauca-Magdalena Fauna.)



FOREST ON THE CAUCA RIVER AT RIO FRIO
(Tropical Zone; a humid island in the arid portion of the Cauca-Magdalena Fauna.)

by a few Capybaras on the banks, and red Howling Monkeys in the bamboos.

Fresnado, the port of Cartago, like Juanchito, the port of Cali, is distant three miles from the town it serves. The intervening country, again like that at Cali, is a dry, open plain or potrero. Here small, scattered acacias are the characteristic trees, and Mockingbirds, Vermilion and Tyrant Flycatchers (*Tyrannus melancholichus*), Anis, Lapwings and Milvago Hawks the characteristic birds.

At Cartago, thanks to the assistance of Senor Jesus Velez, we secured riding and pack animals without delay and began our journey across the Quindio the day of our arrival.

Cartago to Giradot.— The trail which crosses the Central Andes over the Quindio Pass has been travelled for centuries. Up to the lower limits of the Temperate Zone (about 9000 ft.) the country through which it passes is more or less settled and under cultivation, and its primitive character is therefore not always obvious to one *en route*. However, Dr. Allen's description of the stations at which he and Miller subsequently collected, supply the essential details, and I give here only the generalized view which one may gain from the saddle.

For the first seven or eight miles, the trail, after leaving Cartago, passes over the low ridge which lies between Cartago and Piedra Moler on the Vieja River, one hundred feet above Cartago. The country is rather arid, and more or less covered with a scrubby growth. From the summit of the ridge a view is had of a well wooded valley which opens into the Cauca Valley, now much constricted and set with hills which mark its termination as a valley and passage into the more mountainous country north of Cartago.

After crossing the Vieja the trail, for the succeeding ten or twelve miles, passes through a comparatively level depression known as El Hoyo de Quindio. It is bordered by a bushy scrub and some first-growth, with much fine bamboo, which reaches its upper limit at about 5500 feet. There is no outlook until, at the end of about ten miles, the trail gradually ascends and takes to the ridges. The depression through which we have passed is now seen behind us with the Western Andes in the distance, and on each side well-wooded valleys open. A few miles further the picturesque town of Finlandia (6400 ft.) is seen and beyond it we had our first view of the main Central Andes with the snow-fields of Santa Isabel.

Finlandia was reached at 4 P. M. after eight hours' travel by mule from Piedra Moler, a distance of about twenty-five miles with an ascent, always gradual, of about three thousand feet. We were still in the foothills, which, in softly rounded, green, grassy billows, rolled downward toward the Cauca Valley and flowed indefinitely north and south along the base of the main range of the Central Andes, which arose impressively across a plain-like valley to the east. From this point we had superb but brief views of Santa Isabel and Tolima.

We passed the night at Finlandia and the following morning crossed the valley to the east. At the end of an hour we entered the first primeval forest through which the trail had passed and from this point to the summit of the ridge which overlooks the Quindio River, with the Boquilla at its base, there is much Subtropical Zone forest. Here we saw *Hypopyrrhus pyrohypogaster* for the first time. After fording the Quindio River, a rapidly flowing stream, at the Boquilla (alt. 6100 ft.), the trail rises steeply through an open country to Salento, which is reached in a thirty-minute climb of 900 feet.

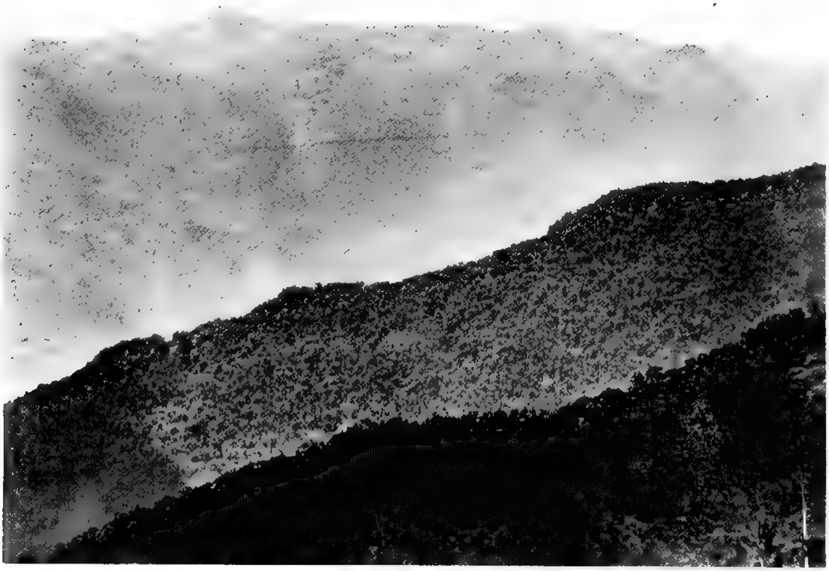
Salento (alt. 7000 ft.), standing on a shelf at the base of the main range of the Central Andes, is the last town through which the traveller to the Magdalena Valley passes until he reaches Ibagüe at the eastern base of the chain.

Although one has gained an altitude of about 3500 feet above Cartago, the grade is so low that one has done no real climbing, and the ascent of the Andes may be said to begin definitely at Salento or, to be more exact, at the Quindio River, 900 feet below Salento.

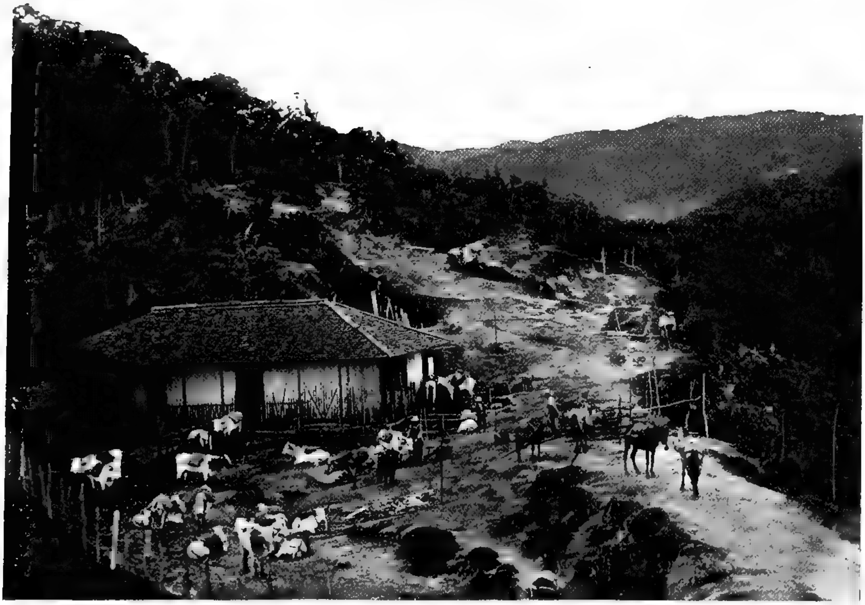
In an hour after leaving Salento we felt that we were in the heart of the Andes. Below lay the Quindio Valley, carpeted with grass and with a scattered growth of tall palms fringing the stream which winds through it; above was an endless array of mountains leading up to the brown paramo and gleaming snowfields of Santa Isabel.

Until we reached an altitude of 9000 feet there was little growth near the trail and Allen's detailed description of the collecting station near Salento must be consulted for information in regard to the nature of the primitive vegetation at this point. At the altitude named, we reached the lower limits of the Temperate Zone and coincidentally the upper limits at which the land had been cleared for agricultural purposes. In consequence, forests now bordered or were near the trail. At first they were composed of large, open-branched trees among which fine oaks were conspicuous. As we ascended they became much lower and more finely branched, with small, close-set rigid leaves, and a profusion of white moss.

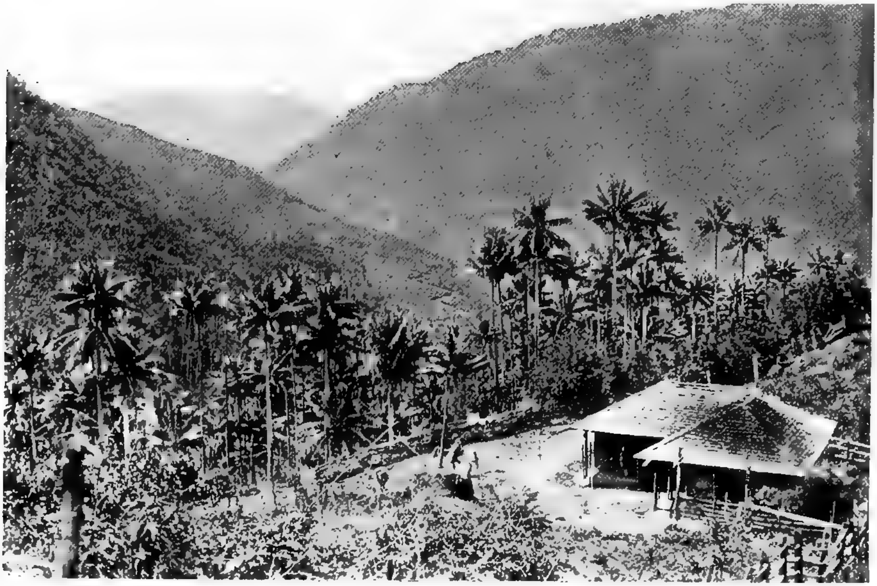
This Temperate Zone forest thickly covered the mountains to the mouth of the Pass. At Laguneta (10,000 ft.) it was fully developed and the abundance of bird-life induced us to select this place as a collecting station for Miller and Allen who, three months later, made a most valuable collection there particularly noteworthy for the number of Grallarias it contained.



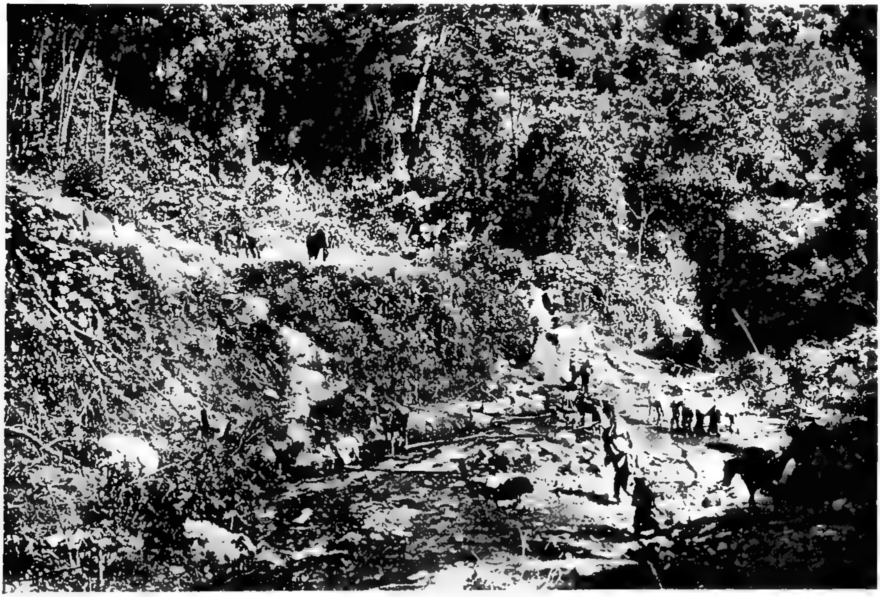
SANTA ISABEL FROM LAGUNETA
Note the continuous forest.
(Temperate Zone.)



LAGUNETA
A stopping-place on the Quindio Trail near the camp of Expedition No. 3.
An ox pack-train is resting.
(Temperate Zone.)



The Quindio Trail
A scene in the Central Andes between Volcancito and Rio Tochecito, showing wax palms.
(Subtropical Zone; West Andean Fauna.)



The Quindio Trail
Rio Tochecito. Compare with preceding picture to illustrate differences between vegetation, along the trail, of ridges and intervening valleys.
(Subtropical Zone.)

At 9000 feet we secured a specimen of *Myioborus chrysops,* the first indication of an eastern slope fauna, and the following day it was found to be abundant on the Tochecito. At Laguneta, distant only three hours by mule from Salento, the bird-life had completely changed. The Subtropical species were left behind and in their places such characteristic Temperate Zone birds as *Semimerula gigas gigantodes, Atlapetes schistaceus,* and *Psittospiza riefferi* were seen commonly by the wayside.

After crossing the Divide (11,500 ft.) the descent toward Volcancito is through a country from which the forest has been recently cut, but the evidence indicated that it had covered the mountain sides, as at a distance from the trail it still does.

About 1000 feet below the summit wax palms (discovered on the Quindio Trail by Humboldt and Bonpland in 1801) were first encountered and these stately trees, in scattered groups or densely growing masses, were the most abundant aboreal form, from this point to the Toché River. They attained a height of at least 180 feet and were of especial interest to us as the home of the fine Yellow-eared Parrot (*Ogonorhynchus icterotis*). In places nearly every palm was occupied by a pair of these birds whose nest-holes opened just below the lowest leaves.

The trail now descends by steep zig-zags to the Tochecito River (alt. 9000 ft.), a rushing mountain stream some ten feet in width with banks bordered by a luxuriant undergrowth and some small parasite-covered trees. Beyond these banks the mountain sides were covered with wax-palms with some bushy lower growth. Birds were not numerous.

Essentially similar conditions exist to the Toché Valley (7100 ft.) of which a most impressive view is obtained from a point on the trail, at least 2000 feet above it. To the right the eye follows the course of the beautiful foaming Rio Toché, here about eighty feet in width, the home of Torrent Ducks (*Merganetta columbiana*) and Ousels (*Cinclus leuconotus*); to the left at some distance, the floor of the valley is covered with a heavy forest growth which, unfortunately, we have not explored. Specimens of wide-ranging, plastic species taken at this point are, as might be expected, referable to the Magdalena Valley, rather than Cauca Valley form.

We had now returned to the Subtropical Zone. There is a small settlement on the Toché and from this point onward to Ibagüe the country bordering the trail is, or has been, largely under cultivation. Small patches of the original forest growth were found at intervals, notably near El Eden, but the work of man near the trail and heavy clouds which often obscured all but the immediate landscape, made it difficult to gain a very clear idea of primitive conditions over this part of the trail, though distant mountain sides generally appeared to be wooded.

Ibagüé (alt. 4850 ft.), a city of several thousand people, is situated at the definite junction of the Magdalena Valley plains with the mountains. From this point to the Magdalena River the road passes through a grass-covered, grazing country with more or less scrubby tree growth bordering the streams, but with no real forest. Highly eroded, castellated buttes, arising abruptly several hundred feet from the plain, are characteristic features of this part of the Magdalena Valley and at least as far north and east as the vicinity of La Dorada on the river, where the semiarid upper valley merges into the humid forest region.

The descent is not noticeable, but at Chicoral on the Coello River and distant some thirty miles from Igabüe, we have dropped to an elevation of only 1800 feet, and Honda, on the river, is but 600 feet above the sea.

The country lying between Honda and Barranquilla is described under Expedition No. 7.

Expedition No. 2.— The Popayan Region. May 13, 1911 – July 21, 1911.

Personnel.— Leo E. Miller; W. B. Richardson.

Itinerary.— On May 13, 1911, a few hours after Chapman and Fuertes started their homeward journey in reconnaissance over the Quindio Pass, Miller and Richardson with their pack mules left Cali for Popayan. They reached that city on the 17th, and three days were consumed there in making preparations for a trip to the Western Andes. On May 20 they left Popayan for Cerro Munchique, making their first collecting station May 22, at an elevation of 8325 feet on this mountain. They remained at this station until June 4, when they left for Cocal on the western slope reaching that place June 6, and working there until June 18 when they returned to Popayan for supplies. June 24 they again left Popayan for the Western Andes working at Gallera from June 26 to July 4; La Florida July 5 to 9, and on the summit of the first ridge of the Western Andes (10,340 ft.) from July 10 to 23. At this point they found a typical Temperate Zone fauna, this being the first time this fauna has been discovered in the Western Andes. July 27 they returned to Popayan and at once left for their base at Cali.

Description of Route and Collecting Stations.[1]— "The country through which we passed on the road to Jamundi is level, covered with excellent grass and given up largely to cattle ranches. Two hours beyond Jamundi the country became rolling and here the lomas, or hill country, begins. At 2 P. M., May 14, we crossed the Cauca, here practically as wide as at

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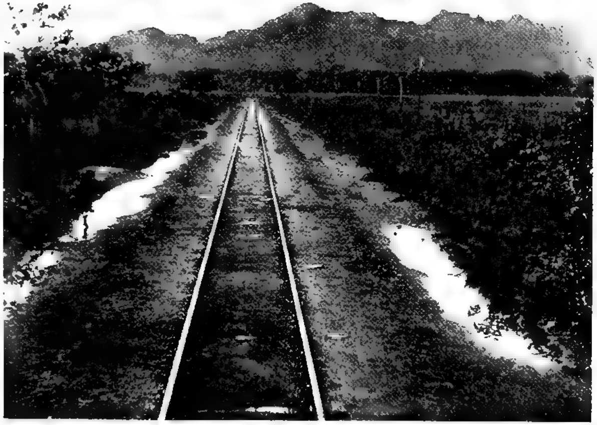
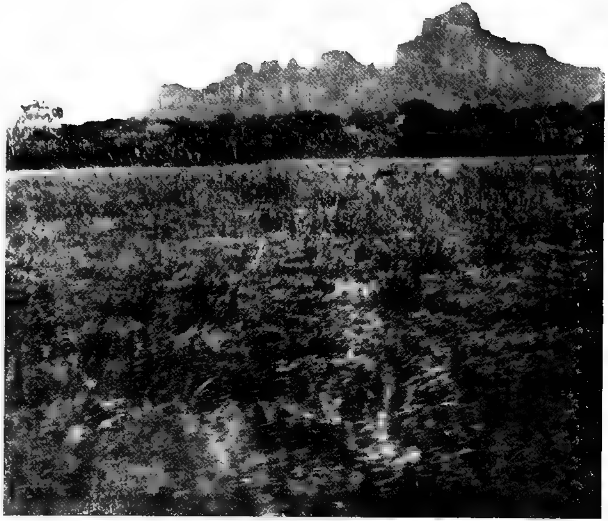
[1] From the reports of Leo E. Miller.



RAILROAD BETWEEN HONDA AND LA DORADA

Characteristic Upper Magdalena Savanna with eroded butte.

(Tropical Zone; arid portion of Cauca-Magdalena Fauna.)



PLAINS OF TOLIMA

Upper Magdalena Valley between Ibagüe and Chicoral with eroded butte.

(Tropical Zone; arid portion of Cauca-Magdalena Fauna.)

Juanchito. We passed through a heavy growth of bamboo, creepers and brush about a mile before reaching the river and heard here several howling monkeys.

"After leaving this bottom-land the country again became rolling. The hills are bare except for a wiry grass. There were no cattle.

"May 15, we continued to pass through a bare, rolling country and at 4:30 P. M. reached an elevation of 5900 feet. The following day the country began to look more attractive. The road generally ran along the top of a ridge and we could see for many miles. Everywhere the hills were covered with low trees and dense shrubbery. At an altitude of 6400 feet we saw Green Jays (*Xanthoura*), Blue Swallows (*Pygochelidon*), Andean White-throats (*Brachyspiza*) and heard Compra Pans (*Grallaria ruficeps*). There were also Black Thrushes (*Merula gigas gigantodes*).[1]"

Popayan to Munchique.— "At first the country is comparatively level with small clumps of trees and large cornfields. There were also groves of oranges, apples of rather poor quality, fair peaches and good bananas and plantains. A very little cacao and a great deal of coffee is grown.

"The second day out (May 21) the country was rolling and barren except for a few clumps of trees and brush. Many Black Merulas and Green Jays were seen. After leaving Chappa, on May 22, the road became very bad, rough and steep. At an altitude of 7200 feet we entered the forest and at 4 P. M. that day made camp at 8325 feet, on the eastern slope, in a small old clearing entirely surrounded by virgin forest in which we collected."

Cerro Munchique to Cocal.— "One hour after leaving camp we reached the top of the ridge (alt. 8800 ft.). Below was a sea of clouds, over which the Pacific could be dimly distinguished. It is distant fifty miles, but owing to the numerous ravines and ridges the natives take eight days to reach the coast. There is but a narrow trail through the dense forest which here is like that on the crest of the ridge above Miraflores.

"The trail is like a stairway down which one goes with much difficulty, some of the steps being six feet or more. We camped by the Rio Tambito, a narrow, swift stream running through a 20-foot gorge, and after crossing another ridge (alt. 6900 ft.) through the forest, reached Cocal (alt. 4000 ft.)[2] at 4 P. M. the next day.

"Cocal is a settlement of negroes who are practically savages. They live in miserable huts and wear no clothes. The mountain sides are very steep and the jungle all but impenetrable. I estimate that fully thirty percent of the specimens shot were lost in the undergrowth. We found our first Cocks-of-the-Rock in the tall palms here."

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[1] Indicating the arid Subtropics, to which the Temperate Zone Black Merula descends.— F. M. C.

[2] The collections from Cocal include species which we have not elsewhere found at so low an elevation, but Mr. Miller tells me that some of the birds labeled Cocal were taken at a higher altitude than the settlement.

Popayan to Gallera.— "For the first day the country is rough and bare. On the morning of the second day we reached virgin forest on the eastern slope of the Western Andes at an elevation of 7500 feet. After reaching the crest of the range (alt. 10,340 ft.) the road runs for about four miles along it. From this point one may see the Pacific faintly. The vegetation is scarce, scrubby and stunted. Here we worked under difficulties, living in the small tent. The wind blew almost constantly and there were a number of severe electrical storms, during which it blew, rained and hailed with great violence. These storms are preceded by dense fog, so that it was not possible to go any distance from camp without danger of falling hundreds of feet off the trail.

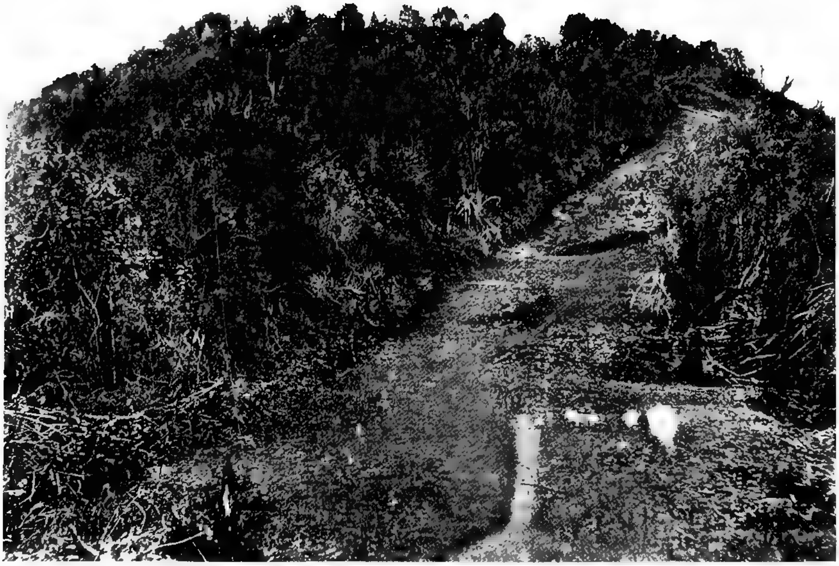
"The new government road runs down the west side in zig-zags. Two thousand feet down we struck the heavy forest. Gallera (alt. 7000 ft.) is a camp of road laborers in the very heart of the forest. There is not one side trail. The forest is impenetrable and we found few birds."

Expedition No. 3.— Lower end of the Cauca Valley, The Quindio Trail, Cartago to San Juan River. August 22, 1911 – January 7, 1912.

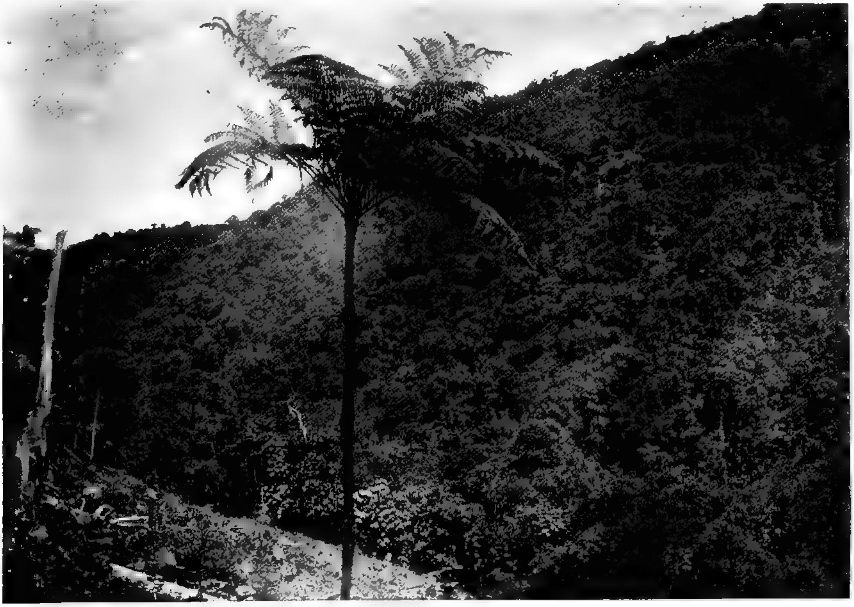
Personnel.— Leo E. Miller; Arthur A. Allen.

Itinerary.— Miller and Allen sailed from Cali on a Cauca River steamer August 22, 1911, and arrived at Cartago on the 25th. Cartago was left on the 27th and Laguneta, just below the Quindio Pass, reached on the 28th. Here they pitched their tent at an altitude of 10,300 ft. and remained until September 11, when they retraced their steps as far as Salento and, the following day, began the ascent to Santa Isabel through the Boquilla Valley. They reached the Paramo, at an altitude of 12,700 feet, on September 13, and camped there until the 20th, then moved to a point about a thousand feet lower and collected there for three days.

September 25 they returned to Salento and on October 3 they began a trip over the Quindio Trail, to Chicoral in the Magdalena Valley, with the object of collecting the more characteristic species at a number of localities and thus determining zonal and faunal limits. Chicoral was reached October 6 and collections were made there until the 13th, when they began their return journey, stopping at El Eden October 17–21, Rio Toché October 23–27, and returning to Salento October 31. Collections were made in the vicinity of Salento until the 13th when they returned to Cartago *en route* to Rio Frio on the Cauca. Here they worked in the heavy



CREST OF WESTERN ANDES, WEST OF POPAYAN.
Scene near camp of Expedition No. 2; alt. 10,340 ft.
(Temperate Zone.)



LA GALLERA, WESTERN ANDES
Near camp of Expedition No. 2.
(Subtropical Zone; West Andean Fauna.)

forest until December 2, when again they went to Cartago to make preparations for the crossing of the Western Andes, the most difficult journey thus far undertaken.

Cartago was left December 7, and, through a misunderstanding, the journey to the San Juan Valley was made as rapidly as possible without pause for collecting. The few specimens secured *en route* indicate that the fauna differs in some respects from that of a section through the same chain from Cali to Buenaventura, and we cannot but regret the absence of specimens from this region.

Juntas de Tamaná was reached December 14 and left December 20; and collections were also made at Nóvita from December 21 to 27. During these two weeks 277 birds and 39 mammals were collected under the unfavorable conditions of the rainy season. Doubtless this over-exertion made both men more than usually susceptible to the pernicious type of malaria which prevails in this unhealthful region. Both contracted severe attacks of fever, and on returning to Cali, January 7, were under a physician's care for several weeks.

Description of Route and Collecting Stations.— A general account of the route between Cali and Cartago and Giradot, based on the reconnaissance made by Chapman and Fuertes in May, 1911, will be found under 'Expedition No. 1.' The following detailed descriptions of the stations on the route at which collections were made were prepared by Allen, who also writes the report on the ascent to the Paramo of Santa Isabel and on the journey from Cartago to the San Juan region.

Rio Frio.— "Most of our collecting here was done in the forest on the east bank of the river except for two trips to a rather extensive marsh somewhat south of the Rio Frio, and about an eighth of a mile back from the Cauca. Some collecting was also done along the northerly edge of the forest, the country becoming more open in this direction, the forest extending to a much greater distance south from the port.

"The forest reminds one considerably of our northern deciduous forests in which the giant oaks are replaced by ceibas and the maples by cecropias. There are comparatively few ferns, orchids or epiphytes of any kind except a few "pines" (bromelias) and very little moss. The forest floor is covered with dead leaves and with little undergrowth except about clearings and more open spots in the forest where it is very dense. But it was in such places that the birds were most abundant, as we found here a greater abundance of individuals than anywhere else, though the number of species was perhaps more limited than in the 'cloud' forest.[1]

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[1] That is, forest of the Subtropical Zone.— F. M. C.

"I did not attempt to explore the marsh to its full extent because of its evident treachery and the difficulty of progress through it. It was apparently surrounded on all sides by forest, although toward the south this seemed to thin out and was perhaps no more than a fringe about the edge. The marsh appeared as though it sometimes might be a lake although at this time of year (November) there was little open water. The predominant vegetation was a coarse sedge, the tangled roots of which furnished the only support for one attempting to walk through it, for elsewhere, and below these roots, was bottomless black muck. About the edge of the marsh, fringing the forest, was a rank growth, almost impenetrable, of thorny bushes and growing out into the marsh were scattered bushes of marsh mallows (*Hibiscus?*). Where the sedges had not yet established themselves, were extensive rafts of the water hyacinth and a plant that looks like coarse lettuce. On these rafts were flocks of Jacanas and Spurwings, White Ibis, Roseate Spoonbills, and White Egrets. In the small patches of open water floated Muscovy Ducks, Cinnamon Teal, Fulvous and Black-bellied Tree Ducks. In the sedges Rails skulked and there were many Screamers. The Black Marsh Hawk (*Circus*) skimmed low over the sedges just like our northern bird, and a few King Vultures sailed high overhead. It was a wonderful spot, I should like to have spent a month in studying it alone."

El Roble.[1]— "El Roble, at an altitude of 7100 feet, is the last posada before descending into the valley of the Boquia. The collecting here was done in two kinds of places: the comparatively level forest at the altitude given, and the forest at a considerable lower level filling the valley of one of the tributaries of the Boquia. The level forest was not much less humid than that at Laguneta, with correspondingly less moss on the trees and on the forest floor. That along the stream was just as humid, if not more so than at Laguneta. Along the trail and about clearings, etc. the plants and birds were similar to those about Cali, but in the forest and particularly along the stream, the forms were those of the Subtropical Zone. The 'century plant' and the tree fern seemed to me to reach their greatest luxuriance here, the tree fern in the forest, the yucca in the open country, along roadsides, etc."

Salento.— "Most of our collecting near Salento was done along the Boquia River at an altitude of 6500 feet. The flora and fauna of the open country of the Boquia Valley and about Salento is similar to that of El Roble with a somewhat larger amount of the Cauca Valley element such as the Spanish bayonet, yuccas, plantains, a few bananas and oranges. Com-

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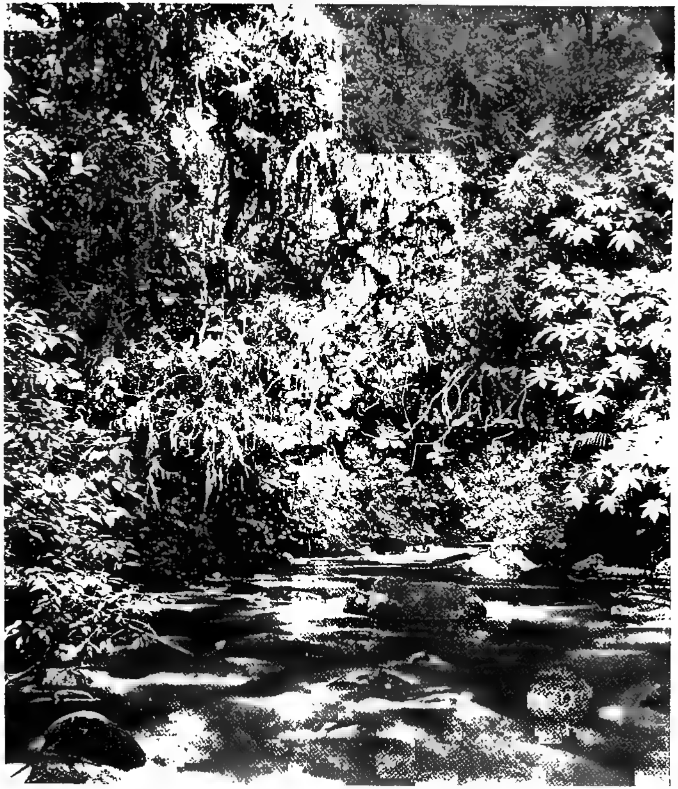
[1] To prevent confusion with a station of the same name above Fusugasugá, in the Eastern Andes, specimens taken at El Roble are listed under Salento, the Salento collecting ground being nearby and in the same zone.— F. M. C.

BOQUILLA VALLEY FROM SALENTO
(Subtropical Zone; West Andean Fauna.)



NEAR SALENTO
A stream flowing into the Boquilla.
(Subtropical Zone; West Andean Fauna.)

paratively little of this open-country fauna was collected and most of the birds came either from the narrow strip of woods along the river, or from Santa Rita, a small tributary with well-wooded banks, entering from the west. The Santa Rita is a beautiful dashing mountain stream, cutting through the rock in narrow gorges or pouring over huge boulders and arched over by luxuriant vegetation, rich in moss and epiphytes; perhaps the most luxuriant that we found except in parts of the Western Andes. Here lived the Cock-of-the-Rock and *Pharomacrus*."

Laguneta.— "The forest in which we pitched our tent at Laguneta, at an altitude of 10,300 feet, is fairly open. The vegetation includes a few small palms, tree ferns, orchids and epiphytes of many kinds but gives one the general effect of some of our denser northern forests. The large trees, of which some are oaks, are rather sparingly branched and thinly leaved so that sunlight reaches the ground in most places. The orchids, 'pines,' moss and other epiphytes on the branches are responsible for as much shade as the trees themselves. The undergrowth is not dense except in the clearings — it being the vines and 'climbing bamboo' that makes the forest impenetrable. The forest floor is remarkably bare with very few herbaceous plants (due to season ?), few ferns, and no moss (on the ground). The leaves are mostly thick and heavily glutinized or covered with down and, though some are large, the average is small. The clearings resemble our northern clearings in general appearance — grown up to bushes and small trees. Here occurs a pokeberry upon which certain birds feed. The underbrush is always extremely dense and almost impenetrable without a knife.

"We remained in this camp from August 30 until September 11. During this time we had very favorable weather with but little light rain. For several days, however, we had very high winds. The temperature was very uniform averaging 48° at 6:30 A. M. and 64° at noon (the nearest to maximum and minimum that we could get)."

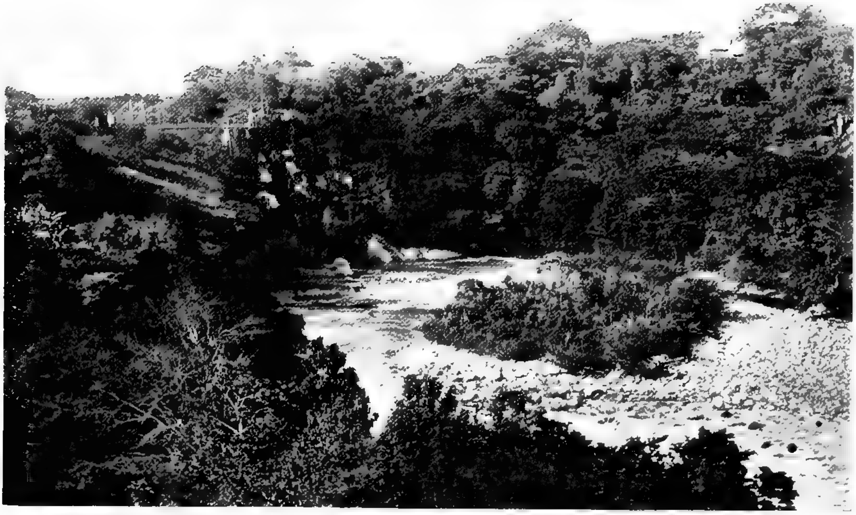
Rio Tochê.— "Most of the collecting here was done along the river where there was a sparse growth of trees, but two trips were made up the river to where it was heavily forested, humid and luxuriant, resembling the banks off Santa Rita near Salento. A few birds, notably *Atlapetes flaviceps*, were taken from the brush covering the cleared mountainsides of the open valley not far from the trail."

El Eden.— "The country about El Eden at an altitude of 8500 to 9000 feet, seemed intermediate between the valley type, such as was found at Salento, and the cloud forests of Laguneta. This is due, I suppose, to the large amount of clearing and the comparatively small extent and isolation (?) of the forest. In the forest, birds were very scarce and in the open country birds were also less abundant than elsewhere. We were disappointed in the collecting here since forms were neither abundant nor distinctive."

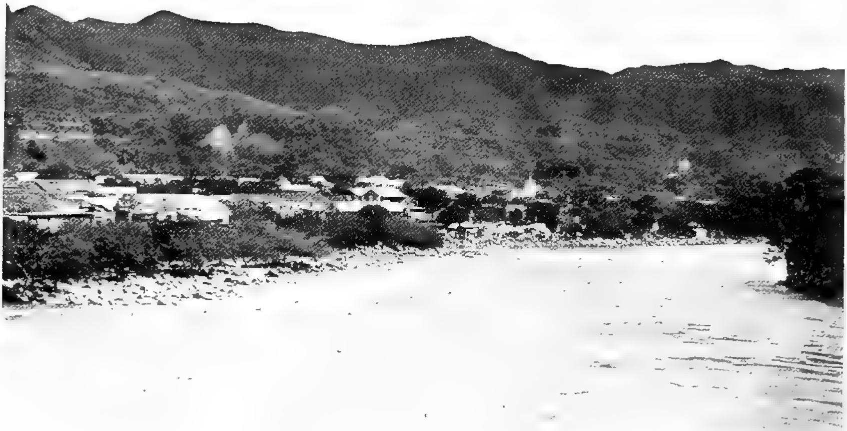
Chicoral.— "Chicoral is on the west side of the Magdalena Valley at an altitude of 1200 feet. The Valley at this point is very arid, even along the streams, although this was probably emphasized by the fact that it had not rained for five months when we arrived. There were many more cacti and palmettos than in the Cauca Valley, with few epiphytes or orchids on the trees. Most of the collecting was done in the sparse woods along the river and scrubby places about the pastures and a little on the open plain which was covered with coarse dry grass. Along the river birds were very plentiful, including many migrants from North America."

Salento to the Paramo of Santa Isabel.— "The Valley of the Boquia leads northeast past Salento and the trail to the Paramo follows this valley to the very headwaters. The valley, which we crossed at Boquia on our way to Laguneta, at an altitude of 6100 feet, rises gently until, where we left it, it was 8300 feet. It is broad and open with little vegetation, except a narrow girth along the stream and a scattered growth of magnificent palms. These continue to the head of the valley and up on the mountainside to at least 9500 feet.

"Leaving the valley of the Boquia at 8300 feet, the trail leads almost due north up the mountainside at a very sharp angle. The trail is poor and in some spots practically obliterated. The lower mountainside is very bare except for the scattered palms, having been burned and cleared. Corn and wheat are growing in spots but most of the country is closely cropped by cattle. The open country continues to an altitude of 9300 feet; here the forest begins, and so far as we could observe resembles very closely that of Laguneta. The trail now becomes slightly more marked so that one has no difficulty in finding the way. At 4:20 P. M. we reached the second house above the valley, at an altitude of 10,550 feet, where we stopped for the night. The next morning we continued on our way to the Paramo. The trail leads through large clearings and patches of woods similar to that of Laguneta until the 12,000-foot mark is reached where the forest appears quite different. The trees are large, the woods more open with an abundance of moss even on the forest floor — less of the 'climbing bamboo,' which has been replaced by another species more like huge grass. The moss itself is very different in appearance being almost black. A few yellow orchids were in bloom. The appearance of this woods leads us to decide to stop and investigate it for a few days on our way back. This forest continues to from 12,400–12,600 feet where a decided change takes place. The large trees disappear and smaller, more or less recumbent species, take their place, resembling large bushes. Large bushes are intermingled



CHICORAL BRIDGE
Collecting ground of Expedition No. 2.
(Tropical Zone; arid portion of Cauca-Magdalena Fauna.)



GIRADOT, UPPER MAGDALENA RIVER
(Tropical Zone; arid portion of Cauca-Magdalena Fauna.)

with them and sphagnum, gentians, dwarf lupines, yellow-eyed grass, a yellow sorrel, similar to ours but larger, a buttercup, a peculiar fern, and numerous composites, mostly dwarfed rosettes but one a very showy purple and yellow species, called "arnica" by the natives. The wet places, along streams or in sink holes, give one the impression again of our northern bogs only here there is very little or no sphagnum. Its place is taken by a peculiar daisy whose thick set rosettes of short stiff leaves form great hummocks over soft places. Blueberries were plentiful but bitter, woody, and inedible, except for the birds.

"When we reached the Paramo, we made for the top of the ridge and looking over found a beautiful little valley suspended there in mid-air. The lower end of it was wooded at the sides but the centre and upper end was open Paramo. Down the centre rushed a sparkling mountain stream which made up in sound what it lacked in size. On either side of the valley the ridge rose from 13,500–15,000 feet and the valley itself lay at about 12,700.

"We descended into the valley and pitched our tent at the edge of the woods. In this valley was done most of the collecting. We later explored up to an altitude of 15,200 feet (nearly the limit of vegetation and above the base of the snowline on the peaks) and found the vegetation practically the same and the fauna identical, except that it was much more condensed in the valleys, especially along the stream. The vegetation extended to about 15,500 feet and above that all was bare, frosted rock. At this altitude and open situation, birds were very few but without exception were identical with those in the valley. The woods which cover the mountainside below, and the nature of which has already been described, extend up the sides of the valley for about a half mile to an altitude of 12,600 feet. The centre of the valley is open from 12,400 feet up but the typical Paramo does not begin until 12,600 feet.

"The birds of the open Paramo are comparatively few in species and not extremely abundant in numbers, especially on the ridges. They are most abundant along the stream and in the swamp which occurs mostly along the stream.

"The birds of the woods bordering the Paramo were of course very different and consisted mainly of Laguneta species with a few others of like nature.

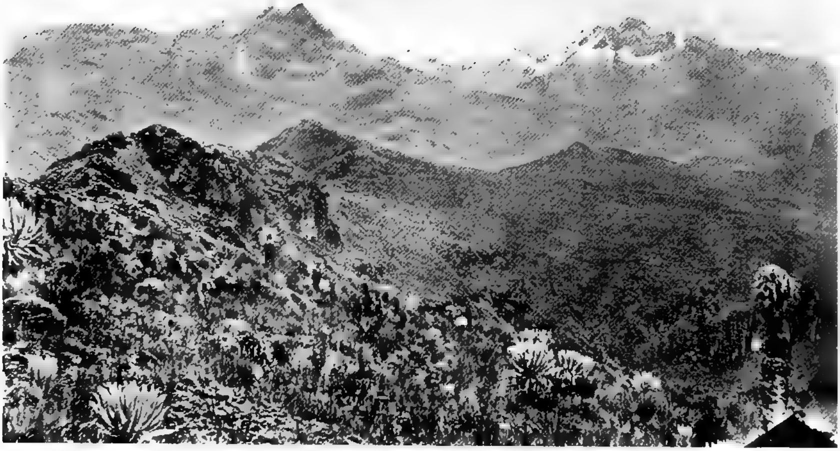
"We remained at this camp for just a week and collected 200 birds. The weather was very pleasant although the nights were cold, several times ice forming in the water-pail. The temperature at 6 A. M. varied from 37° to 45°, dependent upon whether it were cloudy or not, and at noon got up as high as 76°. The mornings were generally more or less clear but shortly after noon clouds usually rolled up the valley surrounding us in fog; the ridge at the end of the valley was seldom seen in the afternoon.

"From the Paramo, on September 2, we retraced our steps through the 12,000 foot woods to a vacant house at 11,500 feet, intending to remain several days and work the woods. We left on the third day, however, after making 75 skins, for we found that the fauna was not strikingly different from that of Laguneta."

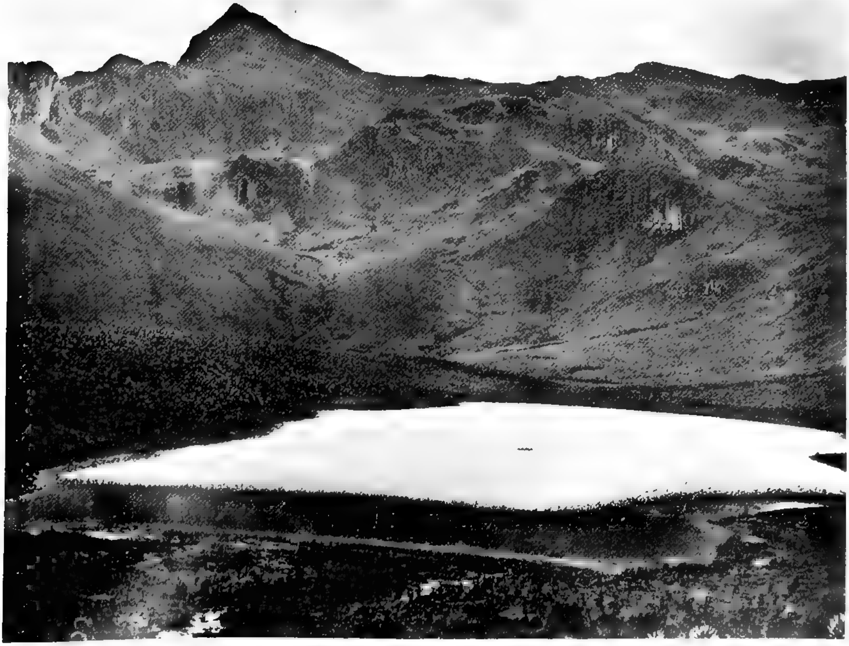
Cartago to Novita.— "We left Cartago December 7, Miller having been fortunate enough to locate some oxen going to Salencio. Crossing the river the valley is more rolling than on the other side, but just as arid. Forty minutes brings one to Anserma but the trail branches off just before reaching the town and soon winds up a long ridge to an altitude of 6800 feet, drops across a valley to 5800 feet, and then rises again to 7800 feet. This country is much like that across the valley on the Quindio Trail, and the birds, so far as observed, likewise. There is little sign of humidity until 6800 feet is reached where moss on the trees and an abundance of ferns bespeak of the 'cloud zone.' There was little or no bamboo except along one stream low-down (3800 ft.) and no apparent change in the birds until this upper zone (above 6800 ft.) was reached. This humid forest reached its greatest development on the western slope of the ridge although it was very distinct on the eastern slope down to 6800 feet. On the western slope it extended down to perhaps 6000 feet. (I have not this altitude exactly.) On the top it is extremely rank and luxuriant — far more than we had met before, although perhaps not more so than at San Antonio. Birds were very scarce, as usual in this humid forest; the trail descends very steeply from this forest through more or less cleared country to Salencio, at an altitude of 5,500 feet. Here we staid two days while Miller engaged the peons for the rest of the trip. In the river valley (5000 ft.) below is a heavy growth of bamboo. Between this and humid forest (at a little distance from town) is a good forest growth of an intermediate nature.

"Leaving Salencio the trail follows up the river Bueltas, a small, dashing mountain stream — much like the Santa Rita near Salento — with luxuriant woods or mossy cliffs on either side, much moss, epiphytes, etc. It is a typical Cock-of-the-Rock stream, and we had not waded many miles over its slippery rocks or on its mossy logs before I got a nice male of *Rupicola sanguinolenta.* After leaving Salencio we knew scarcely a dry moment till we reached Juntas. The first night at an altitude of [illegible] feet, it rained all night, and we had neither tent nor blankets, for the peon carrying them deserted us without our knowing it.

"The trail follows up the Bueltas to its very headwaters (alt. 6,600 ft.) where it leads sharply up the mountain through deep crevices or gulleys,



PARAMO OF SANTA ISABEL, CENTRAL ANDES
Collecting ground of Expedition No. 2.
(Paramo Zone.)



PARAMO OF SANTA ISABEL, CENTRAL ANDES
Near camp site of Expedition No. 2; alt. 12,500 ft.
(Paramo Zone.)

in places grown over above by the luxuriant vegetation forming tunnels, until an altitude of 7,400 feet is reached. The forest now is very luxuriant, similar to that on the top of the first ridge. Here was an assemblage of birds mostly new to me. I should like to have been able to work it thoroughly, but of course we could not stop even for a day on account of the scarcity of food.

"This extremely humid forest extends down the western slope of this second ridge until 4000 feet is reached where the change, which is complete at 3,500 feet, begins. The moss and epiphytes gradually disappear, the forest floor becomes dryer, the bamboo appears and becomes abundant, and the forest takes on much of the character of the Rio Frio vegetation. The change in the birds is likewise very noticeable. This forest continues down and across the valley and up the east side of the third ridge to practically the same altitude, it being only on its very top that the humid zone prevails. The trail coming down the west slope of the second ridge follows the ridge which separates the Ingará from the Avita, which flow together at El Puente to form the Tamaná. El Puente is a collection of some half dozen bamboo houses filled with shiftless, long-legged negroes where one can get but a few expensive plantains by way of supplies. The fauna of the valley contains a large percentage of the coast forms, birds which we saw for the first time, but found very common in the Chocó proper.

"The top of the last ridge compares favorably with the similar altitude of the second ridge, and is not nearly so humid as the higher altitude, though strikingly different from the bamboo zone below. The west slope of this last ridge is different from any I have before described. There is but little bamboo or none. It is more humid than that zone and yet there is no moss and comparatively few epiphytes. The coast fauna, I believe, there extends nearly to the top — at least to about 3,500 feet. The forest at Juntas, Nóvita and Noanamá seemed practically the same in nature as this western slope and though we took different birds at each place I presume it was due to the short time spent in each."

Juntas de Tamaná:— "Altitude 400 feet. Except for the clearing in which the small village is located, the entire country is covered with a rich, humid, steaming forest of large trees and comparatively little undergrowth except that formed by the giant vines hanging down from the branches and occasional patches of fern. There are many epiphytes and but little moss, reminding one of Rio Frio, only much more humid. Birds were abundant along the edge of the clearing and along the forest trails but, as elsewhere, scarce in the deep woods."

Nóvita:— "Altitude (150 feet). Although Nóvita has the reputation of being one of the wettest spots in Colombia, the forest seemed less humid than that at Juntas de Tamaná and not very different from that at Rio Frio. The clearing in which the town lies is of much greater extent than at Juntas de Tamaná, and as a result more of the open country birds such as the little Black and White Finches, Blue Tanagers, etc. were found. In the forest birds were most abundant about small clearings or plantain patches which filled these small clearings, especially about flowering trees.

"We left Nóvita in a canoe hoping to make good connections with the steamer at Noanamá which however did not appear. Fortunately Mr. D. C. Stapleton was passing up the river in his launch which was to return in a few days, and he offered to ship us back to Buenaventura, an invitation we gladly accepted.

"The country seems about the same along the San Juan until one gets to sea-level where there is a great increase in the number of species of palms, and from the little we could see from the launch, the forest appears much denser and more luxuriant."

Expedition No. 4.— Cali to San Agustin. February 27 – April 7, 1912.

Personnel.— L. E. Miller and A. A. Allen.

Itinerary.— Proceeding to Popayan over the route followed by Miller and Richardson in May, 1911 (See Expedition No. 2), Miller and Allen, accompanied by J. T. Lloyd, left Popayan on foot February 27, 1912, and traveled southward to La Sierra (Feb. 29–March 4) and Almaguer (March 9–18). At the last-named point they turned to the east to cross to the Magdalena Valley, stopping at Valle de las Pappas (March 22–April 4), and reached San Agustin April 7, after a difficult and trying journey. Allen suffered much from a recurrence of fever acquired in the Chocó and shortly after arriving at San Agustin his condition became so serious that he was obliged to go to Bogotá for treatment and subsequently was invalided home.

Description of Route and Collecting Stations.— The following notes are supplied by Dr. Allen:

Popayan to San Agustin.— "Leaving Popayan (Feb. 27) the country continues very similar to that to the north of the city ranging, from 4700 to 6800 feet in altitude and sparsely covered with vegetation except in the immediate vicinity of the rivers. (The haze or the fog was always so dense that observations of distant ranges or peaks was impossible so that the notes must of necessity be restricted to the country in the immediate vicinity of the trail).

"The fauna and flora likewise continues practically the same, being similar to that of the open country just below El Roble which I have called

BETWEEN BUENAVENTURA AND SAN JOSÉ
(Tropical Zone; Colombian-Pacific Fauna.)

JUNTAS DE TAMANÁ
Typical Chocó Country
(Tropical Zone; Colombian-Pacific Fauna.)

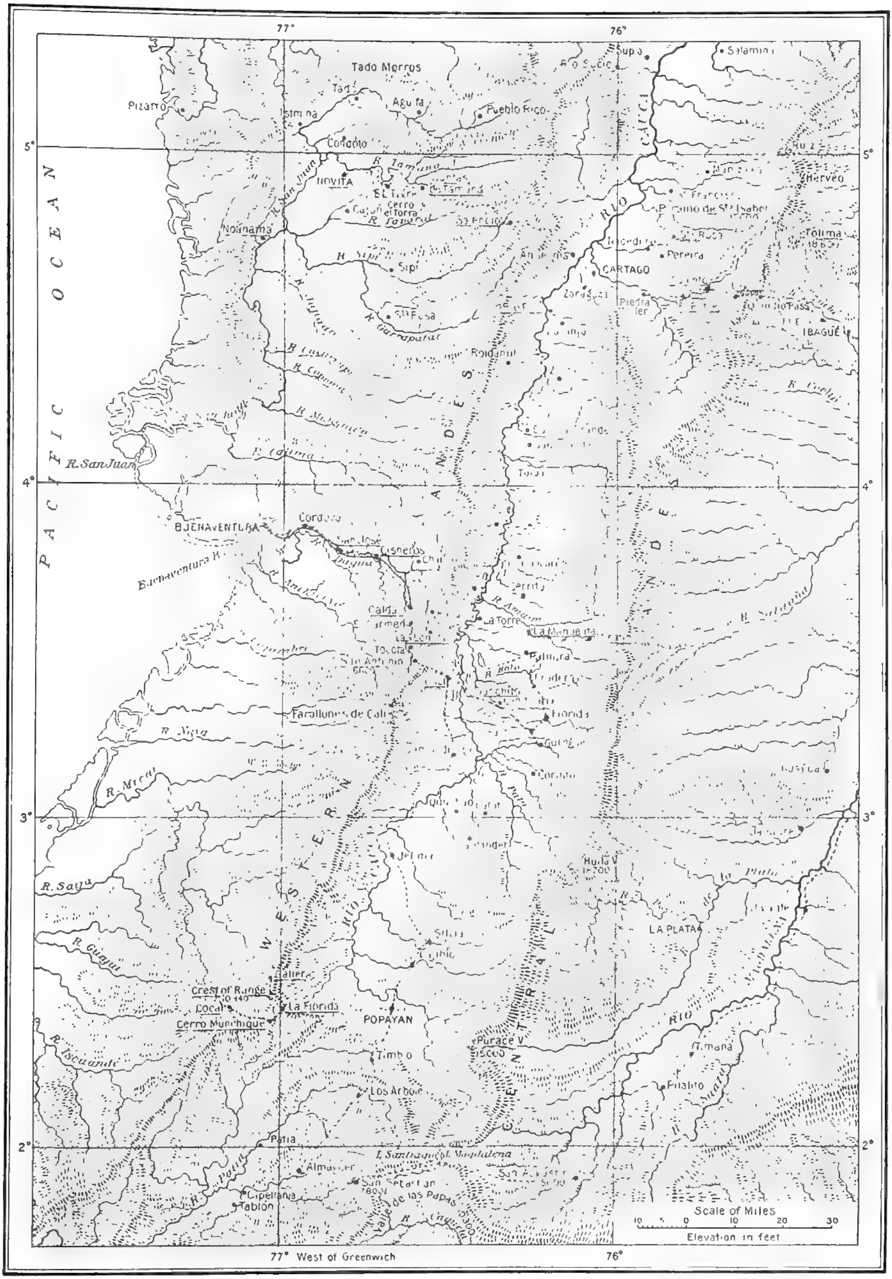
'Transition.' It is probably the lower edge of the transition, however, as along the streams the large bamboo is prevalent and several of the bamboo zone birds noted. Eight miles (approximately) to the south the town of Timbio is reached, situated on a small river of the same name. We are now on the headwaters of the Patia and the streams lie in very deep valleys in places with almost perpendicular sides, averaging a thousand feet in depth. Were it not for these valleys the country would be fairly level, but the steep descents and ascents in crossing these streams makes the travelling slow and difficult. A day and a half journey from Timbio lies the town of La Sierra situated on a saddle-back ridge just before the trail drops into the cañon of the Patia proper. Just before coming to the town small groves of rather open forest occur and here we stopped for three days to collect, securing sixty-six birds and ten mammals. To the east a trail follows the ridge up the sides of Sotará, which is not visible from the trail but which shows considerable forest growth, commencing at what I should judge to be between 8000 and 9000 feet. We camped at 6800 feet; having been told there was no water higher up nor pasturage for the mules. The forest in which we collected at La Sierra was comparatively dry and open, and very limited in extent. Birds were scarce both as to numbers and species, and but a very few new to our former collections were taken. Here was seen the only Condor of the expedition, and it was flying rather high over the ridge toward Sotará.

"Leaving La Sierra (where very few supplies can be secured) the trail is very poor and probably nearly impassable in the wet season, descending steeply to the Patia which here flows at 4700 feet, a rushing, rocky torrent similar to the Toché in size, but crossed by a strong brick bridge which leads one to believe the trail has degenerated. Along the river is a jungle of low trees, but elsewhere the country is covered by coarse grasses and sedges with no higher vegetation. A steep and then gradual ascent brings one to the town of San Miguel, a row of some forty houses straddling the ridge. It is supposed to be but four hours from La Sierra, but our pack mules required a full day. Here we learned for the first time the truth concerning the trail from Almaguer to San Agustin, and the one that continued on to Pasto, and had to alter our plans accordingly. The trail next soon strikes into the valley of the Rio La Vega which is, I believe, another tributary of the Patia and quite similar to it in its precipitous sides. The trail follows a niche in its side for the rest of the day until the town of La Vega is reached at an altitude of 7500 feet. Hereabouts are greater signs of industry than noted elsewhere in most parts of the country, the precipitous mountain sides being covered with corn-fields or wheat and neatly marked off with beautiful hedges; no forest as yet, however, and the fauna still "transition."

"Leaving La Vega, the trail continues up the river for about thirty minutes and then cuts steeply up the mountain-side, winding much until the very top of the ridge is reached at an altitude of 10,350 feet. The trail then follows this ridge for about two miles and then descends on the other side two hours' distant to Almaguer. This ridge extends approximately northeast and southwest, and shows evidences of timbering along the lower line of forest growth. At present, the whole crest of the ridge is covered with most luxuriant forest but it extends downward for but a few hundred feet (altitude). From evidences on the south side of the ridge, I should judge that this forest may have originally extended down as low as 9500 feet, this lower stretch now being covered with high bushes of the "oleander" type, and with occasional trees of size. The forest itself is a most luxuriant one of the 'cloud [= Temperate] zone' type, being much more luxuriant and mossy than that at Laguneta at Santa Isabel. Here we collected nine days — March 9–18. Although the rainy season was not supposed to have set in, it rained every day and the forest was always draped with fog. The trail along the ridge has been recently widened which, together with several side trails, made excellent collecting grounds. As usual; however, birds were scarce, and a considerable number of species were found with nests in the process of construction, a few with eggs, and a few with young on the wing; and the majority of all birds with enlarged reproductive organs.

"The present lower limit of this forest is about 10,000 feet, the upper limit under 11,000, for in following up a ridge which leads off at an angle from the one of the trail, open places with stunted trees and numerous paramo species of shrub and herbaceous plant were encountered as low as 10,600 feet, although the ridge did not extend high enough for real paramo. These open areas were similar, Miller stated, to the crest of the Andes on which he and Richardson had collected west of Popayan. The flora and fauna of this moss forest was very similar to that at Laguneta and Santa Isabel, comparatively few species new to our former collections being taken.

"March 18, we broke camp to start for San Agustin. One long day's travel, or a day and a half, as we had to travel, brings one to the town of San Sebastian. The trail from Almaguer crosses the ridge to the northeast at 9600 feet, which is below the present lower edge of the moss forest, and then descends steeply into the Valley of the Caquiona at 7700 feet. The trail then follows down this valley for about an hour and crosses another ridge into the valley of the San Sebastian, at the head of which is the town of San Sebastian (alt. 7600 ft.). It is a small town of some fifty or sixty houses, where the necessities can be secured on market day; that is, bread, meat, rice, beans and sugar, but at other times it is rather devoid of life. The fauna of these last two valleys appeared similar to that of La Sierra,


77°
76°
77° West of Greenwich
5°
4°
3°
2°
PACIFIC OCEAN
Tado Morros
Pizarro
Istmina
Pueblo Rico
Condoto
NOVITA
Noanama
Sipi
Roldanillo
CARTAGO
Pereira
Tolima 18650
Herveo
IBAGUE
R. San Juan
BUENAVENTURA
Buenaventura B.
Cordoba
San José
Cisneros
R. Dagua
Caldas
La Torre
Palmira
Florida
Farallones de Cali
R. Naya
R. Micai
R. Saija
R. Guapi
Huila V. 18700
LA PLATA
Silvia
Crest of Range 10,340
Cocal
La Florida
Cerro Munchique
POPAYAN
Timbio
Puracé V.
Los Arboles
Patia
Almaguer
San Sebastian
Valle de las Papas
R. Patia
R. Timbiqui
R. Iscuandé
WESTERN ANDES
CENTRAL ANDES
RIO CAUCA
RIO MAGDALENA
Scale of Miles
10 5 0 10 20 30
Elevation in feet

MAP OF CENTRAL WESTERN COLOMBIA

(Drawn by F. Müller under the direction of Frank M. Chapman.)

Dotted red line indicates routes of the Museum expeditions. Collections were made at localities underlined in red.

transition, with innumerable Black Merulas and the common Song Sparrow (*Brachyspiza*). The trail next crosses two ridges at 8000 and 9000 feet respectively, the nature of the country and paramo remaining practically the same. It then ascends the third and last ridge very steeply to the Pass at 10,500 feet, and then descends more gradually into the Valle de Pappas at 9900 feet. This last ridge is covered with the moss forest similar to the one above Almaguer; the forest extending down to 9600 feet with its flora and fauna the same so far as observed.

"From the Pass, the valley appears perfectly flat, with patches of forest and open meadow through which endlessly winds a fair-sized stream. The valley is perhaps a mile and a half wide, and the mountains all about it so far as could be seen through the clouds covered with dense forest. Above this forest again on all the higher peaks and ridges was another area of strict Paramo covering their tops, at this time now covered with snow. The stream was called by the Indians the "Cosiacu" and said to be the headwaters of the Caquetá.

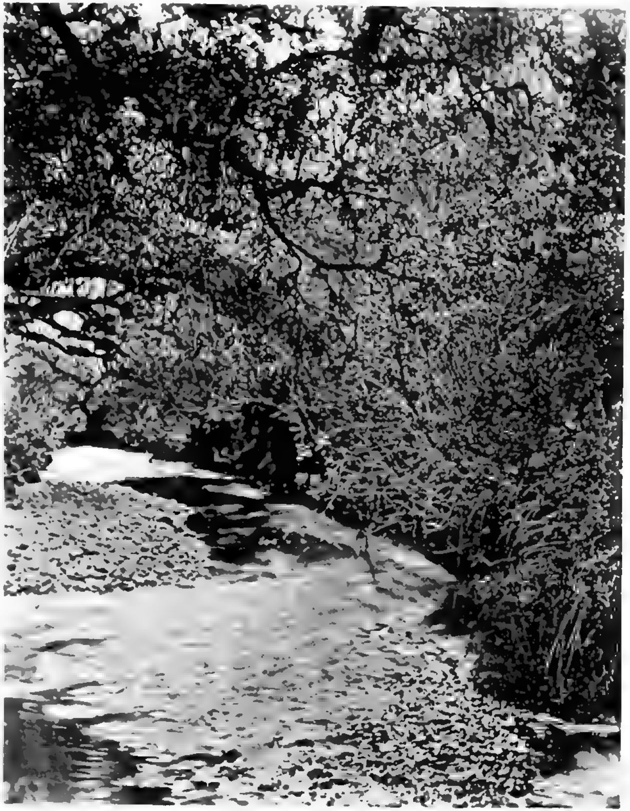
"Descending into the valley, the vegetation is found to be similar to that of the Paramo of Santa Isabel, although here at an altitude of but 9900–11,000 feet, long sedges with numerous similar herbaceous plants and bushes, and numerous "frailejones" were scattered about; at intervals occur small clumps of forest similar to that at the edge of the Paramo of Santa Isabel. The trail, where it has been repaired with brown soil and guide logs, is very good, but in other places where composed of black muck, the natural soil, it is almost impassable for the mules. Here we staid ten days, finding quarters in one room of a finca, to which we had been recommended by its owner in Almaguer.

"The fauna of this valley, while containing very few new forms, is very interesting. As contrasted with Almaguer, where the birds were just commencing to nest, here nidification was about completed for most species. Trees had ceased flowering, and most of the Hummingbirds had disappeared.

"We left the Valle April 3, on the trail for San Agustin. The trail leads practically northeast upward steeply in places, and very rocky, until the top of the Paramo is reached at 12,300 feet. It was extremely rainy and foggy so that we could not see far, but it was very noticeable that there was no sharp line to tree growth as at Santa Isabel. One looks down into narrow valley covered with Paramo vegetation, while all about the mountains are heavily forested in places probably up to 13,000 feet; but even on these wooded slopes the forest is not continuous, but here and there occur patches of the Paramo vegetation scattered about rather miscellaneously — their presence perhaps determined by the nature of the soil rather than the altitude alone. Most of these 'Paramo Valleys' appear to me to be the basins of ancient lakes which have, in some way, broken through their barriers and left behind them only those broad flat-bottomed beds of loose muck, which have gradually been covered over with the growth of coarse sedges, except where the small stream still meanders.

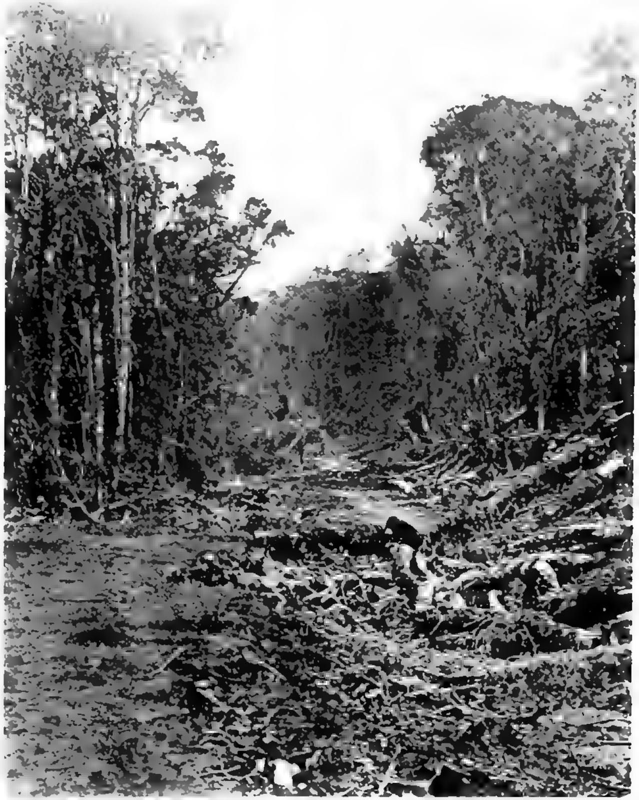
"Just below timber-line the forest is extremely dense with a great deal of moss, caladiums, etc., and with a tree of the banyan type quite prevalent; the fringe of stunted trees is restricted. The trail continues along the ridge for a short distance fringed by low growth, and then begins a steady descent. At 11,000 feet a fair-sized mountain stream is crossed, and then the trail follows approximately down its valley, extremely rocky and stony in parts, and ever very wet with a stream flowing down it. When a level stretch is reached, it is generally very marshy, making progress difficult. In places great cliffs rise perpendicularly for hundreds of feet at either side of the valley, and waterfalls tumble uninterrupted from the top to the river below — at least a thousand feet. These walls could be seen, however, only at intervals when the fog parted for an instant; at other times one could not see fifty feet in advance. Thus the trail descends to Santa Marta at an altitude of 9000 feet. Santa Marta is a rather large but unfinished building used as a general posada by all the Indian packers. It is situated in a beautiful amphitheatre of perhaps a half-mile in diameter, whose perpendicular walls are pierced only by the ingress and egress of the stream (and trail). The river even here is a swollen torrent and called the Magdalena by the Indians; all about is the luxuriant moss forest. It would make an ideal collecting spot.

"A long day's trip over a trail which is comparable only with that between Cartago and Nóvita, brings one to Los Monos which is nothing but a small lean-to situated at the edge of a small clearing. Three hours further, ascending and descending, brings one to Peñaseca, a niche in a perpendicular cliff under-cut so as to be perfectly dry, and no shelter of any kind has been erected or is necessary. A few hundred feet below, almost straight down, rushes the Magdalena, here a mad torrent. The altitude is but 7000 feet, but the moss forest extends uninterrupted down its course and covers its sides,— a wonderful country! I was sorry not to be in a better position to appreciate it. This country between Santa Marta and Peñaseca was the most inviting of the whole trip, and the trail the worst. From Peñaseca to San Agustin, two days, the trail is much better though not good. Leaving the Magdalena at Peñaseca the trail winds up the opposite ridge until an altitude of 7800 feet is reached, and then commences a gradual descent. All of this is strangely enough covered with a luxuriant moss forest, though less so than that across the valley at the same altitude. It extends down to about 7000 feet where a decided change is noticeable,



Near the Source of the Magdalena River

Scene in the Valle de las Pappas.
(Temperate Zone.)



Los Chorrillos, above Almaguer

Exceptionally luxuriant forest at an altitude of 10,000 feet.
(Temperate Zone.)

and though still heavily wooded is more second growth and much less moss. The trail descends again to the river at 6500 feet and follows it to 6100 feet; it then ascends another ridge rather steeply up to 6800 feet (Las Chambas — stop for night) and descends again to 6100 feet, and the river which it follows for but a short distance rising abruptly and then gradually until 7000 feet is reached and a long gradual descent begun to San Agustin. This latter country is much more open than that first reached at 7000 feet, but there is abundant evidence of deforestation until the last descent is commenced to San Agustin, which seems naturally more arid and less forested except along tributary streams which are forested even down below the altitude of San Agustin (6000 ft.). None of these are in the near vicinity of the town, however, the country being semi-arid and more or less like that about Cali. Here I was laid up completely and unable to do any collecting whatever. Here we met Señor Nieto of the Bogotá engineers and discovered that our barometer was reading 900 feet too high, so that the altitude of San Agustin should be 5000 feet. When this error commenced I do not know.

"The country from San Agustin to Neiva and thence to Giradot in general, is very similar to that about the headwaters of the Cauca, being semiarid (more so than the Cauca) except along the streams, where considerable coffee and cacao is raised."

Expedition No. 5.— San Agustin to the Caquetá Region. April 7 - Sept. 1, 1912.

Personnel.— L. E. Miller.

Itinerary.— Illness having compelled Allen to leave the country, Miller carried out the plans of the original expedition, assisted only by natives. From April 7 to 25, and again on May 19 to 21, he worked in the vicinity of San Agustin going far enough from the city to reach the virgin forest. It was during this period that he discovered a nesting colony of the Cock-of-the-Rock. April 27 to May 5 he was resident at La Palma, and from May 7 to 19 at La Candela, both in the forest respectively south and west of San Agustin.

Returning to San Agustin May 20, preparations were made for the trip over the new government trail to the Caquetá Region.

The Eastern Andes were crossed at Andalucia (7000 feet) and some collecting was done on both eastern and western slopes (May 30-June 20). Florencia was reached June 24, and collections made there until July 6, while at La Morelia the work was pushed vigorously from July 8 to July 26. Mr. Miller is, so far as I am aware, the first ornithologist to enter Amazonian

Colombia, and his collections from Florencia and La Morelia add many species to the known avifauna of Colombia.

Description of Collecting Stations.— The following notes are supplied by Mr. Miller:

La Palma.— "La Palma is the name given a place about one day south of San Agústin, on the same trail we came on from the Cauca. There are a number of clearings and large fields of corn; also some pastureland. Around these extends the virgin forest; altitude 5500 feet. The place is not far from the junction of the Magdalena and Mulales.

"The forest is very dense. There are many palms; much large timber and a great deal of moss. Ferns, also, are abundant. The country is mountainside, cut by numerous ravines. Paths there are none, and it was invariably necessary to follow along a small rivulet or ravine. Birds in general were scarce."

La Candela.— "A small Indian ranchito, a day west of San Agustin (with pack animals) bears this name. There is a comparatively small clearing, surrounded on all sides by giant forest. The altitude is 6500 feet. The trail for first half of the way leads through the open country that surrounds San Agustin, and then through the forest, and is fair, but narrow so that the pack mules pass with difficulty.

"The lower growth of the forest consists almost exclusively of palms which reach a height of perhaps thirty feet. The trees are immense, being the thickest, tallest and straightest I have seen in Colombia, and include giant 'cedars.' The forest floor is littered with dried palm leaves, but open and easy to traverse. Birds are not abundant, but more plentiful than at La Palma.

"The climate was cool and delightful with but little rain. There is very little moss in the forest."

Andalucia.— "Before attempting to cross the Eastern Andes, it was thought necessary to make a short survey of the western slope. It had been absolutely impossible to get any reliable information as to the road, etc. to Florencia, and the only way to learn the conditions was to work near the trail and find out from the travellers who chanced along that way. A trip was therefore undertaken to the top of the range, one day from Guadaloupe, the place being called Andalucia, alt. 7000 feet. The altitude of Guadaloupe is 2500 feet.

"Andalucia is a single, very large, boarded house, owned by the Government, situated on a narrow ridge with a large clearing on each side. At least during this season (May–June) the weather was most severe; fog, strong wind, almost continuous rain and very cold, almost recalling conditions on a paramo. Also, the forest was dense, and the vast number of fallen trunks and branches rendered the greater part of it impenetrable. Birds were scarce, but small mammals were plentiful. After three days a camp was established further down on the western slope where conditions were more favorable.

"It was our intention to remain only a week at most, but a series of missions in Guadaloupe attracted everybody for miles around including the peons, so I was left alone and of course could not leave until their return, two weeks later.

"On the western slope, the great forest extends down to 3,500 feet, and in the cañons and ravines, down to 3000 feet. The lower part is comparatively open, with numerous ferns and palms, and as one reaches higher altitude there is much moss, many 'pines,' parasites, creepers, etc., similar to forests of the same altitude previously described. Birds are not plentiful, and mammals scarce.

"Up to 3500 feet there are large areas of wild cane and bamboo along the streams, and in these the most successful trapping was done."

The Magdalena Valley to the Caquetá Region.—"About an hour's ride from Altamira, over a nicely constructed gravel road, takes one to the town of Guadaloupe. Just before reaching the town it is necessary to cross the Rio Saraza, which at this season (June to August) was a swift, muddy stream over a hundred yards wide. The town has a population of about one thousand, numerous small stores, weekly market, etc. All around are thickets of bamboo and wild cane; the altitude is 2450 feet. This zone extends up to nearly 3500 feet.

"The new government road follows closely along a small 'quebrada,' the name of which I could not ascertain, but it is probably the Imaya or Matayna, and a full day's travel with packs takes one to Andalucia, altitude 7000 feet, which is practically the top of the range. The forest up to this point has been described elsewhere, and is continuous over the eastern side until Sucre, altitude 2800 feet, is reached, the second night. The only difference here is that one finds less moss and epiphytes. Sucre is a large board house constructed by the government, and contains the telegraph office, the present end of the line which is being constructed by the government to Florencia.

"From Sucre one continues gradually downward until shortly after noon, to an altitude of 1500 feet. Then there is a sharp hill about 500 feet high, called Llegua Gorda. This was the only bad part of the trail, and, on account of the deep mud, two of the three pack mules had to be unloaded and the packs carried to the top. About two hours beyond we camped at a small hut called La Recluta where there is a large clearing, fine pasture, corn, yuccas and other farm products. It is only a half day to Florencia from here, over a fairly good road, level, with the exception of a small rise or two which, however, are of no consequence.

"Florencia is a small town, with a few hundred inhabitants, but growing rapidly. The altitude is 675 feet. The whole Department of the Caquetá contains but two thousand souls not including Indians, according to the alcalde of Florencia. Provisions can be had at Florencia, but prices of everything but meat and corn are very high.

"Our first work was done a short distance above the town, at an elevation of 1000 feet, at the ranch of one Don Blas. The clearing was the largest I had seen in this locality, there being fodder, plantains, cacao and corn. In this open country birds were abundant. The surrounding forest was comparatively open, and not far away. From the elevated position one has a good view of the Caquetá country, a perfect ocean of forest stretching out ahead as far as the eye can see, which on clear days is many miles. The sight is most impressive. There is not a single rise visible and the forest is of uniform height.

"The forest is comparatively open, that is, free from dense undergrowth. The trees are tall and there are a few tree ferns, many climbing lilies and also many palms. There is not much moss and along the streams there is much bamboo and also wild cane, often mixed with dense clumps of creepers, tall grass and thorny bushes. In places there are small clumps, perhaps a few acres in extent, of dense low trees resembling cecropias and called "estrojo." Streams and rivers are numerous and one is at once impressed with their large size and depth. Also, while swift, they are so silent that one may be near a large river and not know of its presence until at the very edge.

"Clouds hang low, often descending to the ground, especially in the early morning and late night, causing a dense fog. We happened to strike the country in the height of the rainy season, but there were frequently intervals of three bright days with not a drop of rain. On other days the showers, which were heavy, were confined to early morning, the afternoon, after 4 P. M., and night. It rarely rained all day long. About 4 P. M. a cool wind invariably sprang up. At noon the heat was rather intense but not nearly so great in the Magdalena Valley (as I later discovered) below Neiva. The nights were cold so that two blankets were none too many. The expedition was without a thermometer so no observations as to temperature could be made. It is said that during the dry season (December, January and February) the heat is terrific and there is much fever owing to the clouds of mosquitoes that emerge from the pools left by the receding water.

"La Morelia is two days' southeast from Florencia, between the Bodoquera and Pescado. It seems as if the elevation should be greater than

Florencia, but the aneroid registered 600 feet. The trail is bad and all but impassable to mules. There is practically no difference in the forest, but probably there are more streams. There is a ridge of low hills near by, to the east, not over 500 feet higher than the surrounding country, and also heavily forested. Some of the larger birds taken here are said to have been common around Florencia some years ago, but to have retreated with the approach of civilization."

Expedition No. 6.— Tumaco-Barbacoas. July 26 - Oct. 13, 1912.

Personnel.— W. B. Richardson.

Itinerary.— Richardson reached Tumaco by steamer from Panama, July 26. He left there July 30, arriving at Barbacoas August 3. In this unhealthful locality he worked until September 10, when an attack of beri-beri forced him to seek a higher altitude and he continued up the trail toward Pasto to Ricaurte, at an elevation of about 4500 feet. He remained at Ricaurte until September 30, and then returned to Barbacoas, stopping on the way down, as he had on the way up, at Buenavista on the Pasto Trail. Barbacoas was left about October 8, and Tumaco reached October 13. From this point Richardson sailed for Esmeraldas, Ecuador, and for the following year collected in that country.

Description of Route and Collecting Stations.— The following information is taken from Richardson's letters and reports:

"The island of Tumaco is dry, sunny, and sandy with only stunted vegetation; and, on one side, mangroves. There are only a few common birds there. On reaching the mainland at Sala Honda, at the mouth of the Patia, everything changes and the next one hundred miles is through a dense swamp of flooded forests. It is inhabited only by negroes who live on the river banks and cultivate patches of rice and plantains and cut wood for the steamer. Their huts are built of bamboo on poles five to eleven feet above the ground, and they last only a few years. When abandoned their thatched roofs are soon converted by nature into veritable 'roof' gardens; a mass of vines and parasites, ferns, mosses, and even corn and bananas growing on top of them until they cave in.

"After four days by steamer and canoe, I managed to reach Barbacoas. The surrounding country is much like that which exists between Buenaventura and Cisneros on the road to Cali, thick, heavy forest and impenetrable jungle all matted together with vines and undergrowth.

"Nothing is cultivated but plantains. The only paths through the forest lead to gold washings. For that reason I did much collecting from a canoe.

"I arrived at Barbacoas (a town of 4000 negroes and 50 whites) in what was supposed to be the dry season, but it rained about twice a day during my stay. Nine months of the year it is said to pour, and even zinc roofs corrode. The climate is like a Turkish bath.

"The journey from Barbacoas to Ricaurte is about a 75-mile gradual climb over a good road. The intervening country is very broken and uncultivated and is inhabited only along the road, over which hundreds of Indians and mules laden with freight from Pasto and the interior pass daily.

"Ricaurte, with an elevation which I believe to be between 4000–4500 feet,[1] is on the upper edge of the forested zone which extends to this point from the coast. The country above Ricaurte is open, bare and grassy and through it one may pass over steep ascents to the paramo.

"At Ricaurte it is dryer, the forest is less luxuriant and dense than further down, but the country is very broken except along the gradually winding road. I found there many of the birds of San Antonio, Munchique, and Miraflores.

"At Buenavista (alt. 1200 ft.) between Barbacoas and Ricaurte it rained steadily for six days. Only once did I get a glimpse of the snow cap of Mt. Cumbal in Ecuador."

Expedition No. 7.— The Bogotá Region. January 19 – April 16, 1913.

Personnel.— Frank M. Chapman, George K. Cherrie, Louis A. Fuertes, Paul G. Howes, Geoffroy O'Connell, Thomas M. Ring.

Itinerary.— On January 19, 1913, we sailed from Barranquilla up the Magdalena, and by taking advantage of stops for fire-wood and cargo, collected 300 birds during our twelve-day voyage to La Dorada, the port of Honda.

At Honda (alt. 600 ft.) we remained from February 2 to 9, collecting in the immediate vicinity of the city, at the hacienda El Triunfo, a few miles to the north, and at the beautifully situated posada, El Consuelo (alt. 3300 ft.) distant four hours' ride on the mule trail to Bogotá.

February 10, we left Honda on mules over this trail for Bogotá. No collecting was done *en route* during the three-day journey to Facatativá, where a train was taken to Bogotá, but our familiarity in life with many of the more common species observed, permitted us to make notes on their altitudinal distribution as we rode slowly through their respective zones.

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[1] Mr. Richardson's barometer not having reached him he was unable to learn accurately the elevation of Ricaurte. His collections, however, show that it is in the Subtropical Zone.— F. M. C.

COAST NEAR CARTHAGENA
(Tropical Zone; Caribbean Fauna.)

SHORES OF THE LOWER MAGDALENA RIVER
The neighboring savannas support many cattle.
(Tropical Zone; Caribbean Fauna.)

We remained in Bogotá from February 12 to 20 buying mules and supplies for our proposed journey to Villavicencio, distant some ninety miles by trail, at the eastern base of the Andes, and during this period collected on the Savanna in the vicinity of the city.

In order to simplify the problem of transportation and to avoid overtaxing the limited resources of wayside posadas, our party was divided into two sections for the journey to Villavicencio. This plan necessitated the use of only three saddle- and three pack-mules. At the end of a day's journey of twenty to twenty-five miles, the first section stopped. After resting a day the mules were sent back for the second section. On its arrival the first section advanced another day's journey. Relayed in this manner we collected to a limited extent *en route*, at Chipaque (alt. 9000 ft.), Quetame, (alt. 4600 ft.) and Monteredondo (alt. 4500 ft.). The first party reached Buena Vista (alt. 4500 ft.), on the summit of the last ridge of the Andes (the first ridge above Villavicencio) February 28, the second, March 2.

March 5, the first party left for Villavicencio, where it was joined by the second party March 10. The first party remained at Villavicencio until March 15, while the second party returned to Buena Vista March 13.

In all, therefore, we had nearly two weeks' collecting at Buena Vista and Villavicencio.

March 16, we all left Buena Vista for Bogotá. Additional mules were hired to avoid delay and the journey was accomplished in the regulation pack-train time of three days.

March 19, we left Bogotá for Fusugasugá, distant about 35 miles to the south at the upper border of the Tropical Zone of the Magdalena Valley.

Collections were made in the vicinity of Fusugasugá (alt. 5464 ft.) and at Aguadita (alt. about 6500 ft.) March 25 to 31, at El Roble (alt. 8100 ft.) in the Subtropical Zone, April 1 to 4, and at El Piñon (alt. 9600 ft.) in the Temperate Zone April 1 to 5.

April 5 to 9 was devoted to packing, and on April 10 we left Bogotá on our homeward journey, during which no birds were collected.

Barranquilla to Honda via the Magdalena River.— The Caribbean coast of Colombia, both because of a low and irregular rainfall and the character of the soil is comparatively arid. Acacias, cacti and other xerophytic forms are the prevailing types of vegetation. This region, however, is so remote from Bogotá that, so far as I am aware, none of the birds which, in Colombia, are restricted to it are found in Bogotá collections.

It is not until one has passed Calamar and reached the vicinity of Banco, about 150 miles from the mouth of the Magdalena, that the humid, forested region is reached. More favorable soil and increased rainfall, doubtless following condensation attributable to the proximity of the Eastern Andes, presumably are responsible for the change from the open, scrubby vegetation of the arid coastal area to the luxuriant forests which now almost continuously line both shores of the river. Away from the border of the river, however, at least on its eastern bank, the arid zone continues as far as Puerto Nacional whence, according to Wyatt (Ibis, 1871, p. 117) "the first few miles" of the road to Ocaña runs through "small savannas, tracts of open grassy country sprinkled with a few stunted trees, or through woods."

In the more northern part of this humid region tributary streams may make their contribution to the muddy waters of the Magdalena through marshy or low-lying land, but farther up the river the banks are higher and the shores of entering streams are forested.

The humid zone of the floor of the Magdalena continues with no diminution in the luxuriance of the vegetation as far up the river as La Dorada, about 600 miles from its mouth. Between this place and Honda a marked change occurs. Strongly eroded buttes with castellated outlines appear, the soil is thinner and less fertile, and although the rainfall is not so low as at Barranquilla (Mr. Miller, the manager of the railway between La Dorada and Ambalema, tells me that at Mariquita, a few miles east of Honda, it has ranged in a few years observation from 85 to 100 inches annually) the vegetation suggests that of an arid or semi-arid region. The heavy forests are replaced by a more stunted growth and there are large tracts of open country devoted to grazing. This condition apparently prevails to the head of the Magdalena Valley.

Honda to Bogotá.— In a region which has been inhabited by white man for as many years as that lying between Honda and Giradot, and between these towns and the plateau of Bogotá, it is often difficult to determine just what changes man has wrought in the character of the country. At present, however, in following either the mule trail from Honda or the railroad from Giradot, one sees but little forest growth between the Magdalena river and the Savanna of Bogotá. In the upper Magdalena Valley proper, the absence of heavy forest, as has been remarked, is doubtless due to the character of the soil, but on the mountain slopes the first-growth timber has no doubt disappeared in many places before the agriculturist. Remains of this forest were discovered between El Consuelo and El Alto de Sargento on the first ridge of the Andes east of Honda, where at an altitude of some 4000 feet, we found such characteristic species of the Tropical Zone as *Formicarius analis* and *Myrmelastes immaculatus.*

At El Vergel (alt. 5500 ft.), on the summit of the second ridge, or that lying east of Guaduas, there is a small area of apparently primeval forest in which oaks, some 75 feet in height, were prominent and the presence here of *Xanthoura yncas galeata, Brachyspiza capensis, Melanerpes flavi-*

CENTRAL LOWER MAGDALENA RIVER
The country is heavily forested.
(Tropical Zone; Cauca-Magdalena Fauna.)

A WOOD YARD IN THE MAGDALENA FORESTS
Many birds were collected at such localities when the steamer stopped for fuel.
(Tropical Zone; Cauca-Magdalena Fauna.)

gula and *Grallaria ruficapilla* indicated that we had reached the second or Subtropical Zone.

Beyond this place the country is again more or less thickly settled and coffee plantations have replaced the forest which probably once existed here. Certain birds were abundant but the conditions were obviously unnatural and far from satisfactory to one who would study animal life in an undisturbed environment. Possibly owing to the absence of the luxuriant forest which usually occurs at an altitude of from 6000 to 9000 feet, such birds of the Temperate Zone as *Semimerula gigas* and *Sturnella magna meridionalis* were encountered as low as 6000 feet.

At an altitude of 7300 feet, on the line of the railroad from Giradot to Facatativá, one passes through a broad belt of superb first-growth forest, such as doubtless once occupied the slopes now given to agriculture on the Honda trail, but at no other place was primeval forest observed from the railway. Aside, therefore, from the few days at El Consuelo and observations made from mule-back on the road to Facatativá, we did no work in the country lying between Honda and the Bogotá Savanna. In the country above Fusugasugá, however, to be presently described, primeval conditions were found and representative collections made of the bird-life of the Subtropical and Temperate Zones of the western slope of the Eastern Andes.

The Bogotá Savanna.— Bogotá, a locality to which so many species of birds have been attributed, has, as a matter of fact, a comparatively restricted avifauna. Situated at an elevation of 8600 feet, near the southern end of the great Savanna which is so striking and unusual a feature of Colombian Andean topography, and at the western base of the chain which encloses the Savanna at the east, it is in the arid portion of the Temperate Zone. The word arid, as used here, does not necessarily imply sterility, but indicates the existence of conditions which prevent forest growth in a zone where, under favorable circumstances, such growth should occur. For example, at the altitude of Bogotá on the trail from that city to Fusugasugá beyond Cibaté, luxuriant forest growth is found and, in consequence, the upper limit of the Subtropical Zone here reaches upward to somewhat over 9000 feet, or nearly, if not quite, to the divide at El Piñon.

This forest is obviously due to the heavy rainfall which prevails at that point, just as on the Savanna of Bogotá the lack of forest is possibly attributable to insufficient rainfall.[1] However this may be, practically the only tree we saw on the Savanna between Facatativá and Cibaté, is the introduced eucalyptus, and the existence here of a peculiar race (*O. a. peregrina*) of such a plains-loving species as *Otocoris alpestris* implies that the region is naturally treeless.

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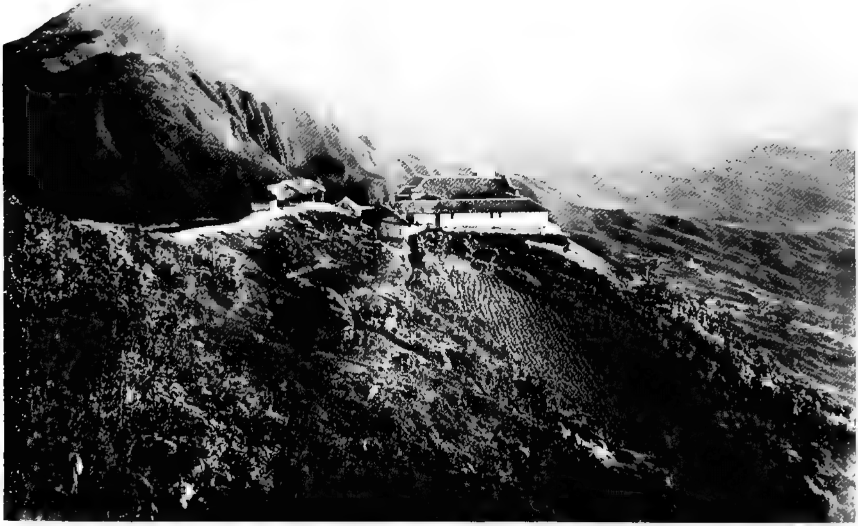
[1] The rainfall at Bogotá is given by Petre ('The Republic of Colombia,' London, 1906) as 42 inches for the six months' wet season.

So far as we observed, every available square foot of the Savanna is used for pasturage or agricultural purposes, chiefly the growing of wheat and corn, the grazing area, however, prevailing. The Bogotá River, as it winds through the Savanna, in places widens into small pools the banks of which are bordered by reeds and cat-tails. In the rainy season depressions of from a few square yards to others of several hundred acres or more become lagoons, and it is in these restricted localities that the resident, as well as winter visitant water-birds of the Savanna are found.

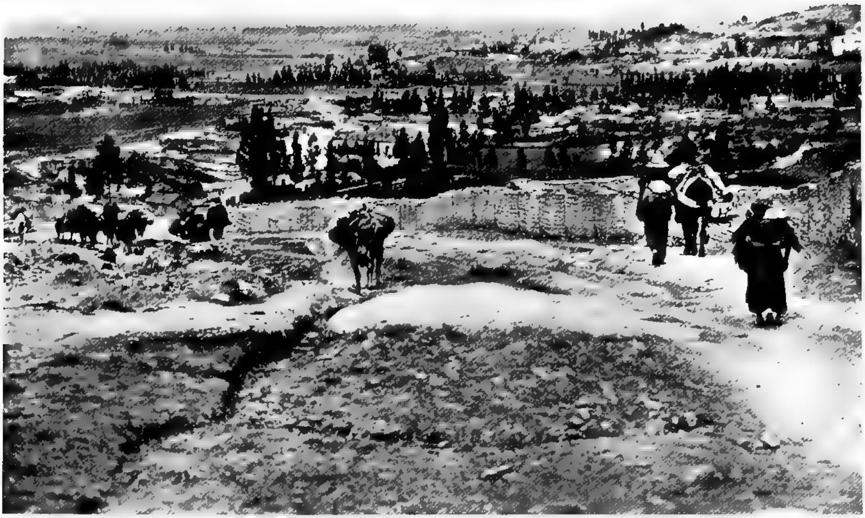
To the North American ornithologist the bird-life of the Savanna holds so many familiar forms that it was difficult for us to realize that we were within 300 miles of the Equator.

By ascending the mountains Guadalupe or Mont Serraté one may reach the Paramo Zone, at an elevation of between 11,000 and 12,000 feet. Our plans to visit this zone with its restricted avifauna, did not, however, mature, and we touched this upper life-zone only at its lower border on the higher parts of the trail between Bogotá and Chipaque.

Bogotá to Villavicencio.— The trail from Bogotá to Villavicencio and the Llanos of eastern Colombia leads directly over that ridge of the Eastern Andes at the western foot of which the city lies. A few squares south of the Central Plaza one turns eastward and the ascent begins before the city limits are reached: The country is rolling rather than precipitous, and for a considerable distance the trail leads over comparatively level country. The actual divide is situated at the extreme eastern edge of the ridge, some ten miles from Bogotá, where from the mouth of the pass, at an altitude of approximately 10,700 feet, one looks down the extremely steep eastern slope to the valley of Chipaque two thousand feet below. The average height of that part of the ridge traversed by the trail is about 10,000 feet, and nowhere does it rise higher than 10,300 until the pass is approached. In limited areas well-developed Temperate Zone forest exists, but the country for the greater part is covered with a bushy scrub, or with low ferns. Both to the north and south cones or spurs of the ridge rise at a sharp angle to as much as 2000 feet above the trail. On the slopes with a northerly exposure, timber-line extended to approximately 11,000–11,500 feet. On southerly slopes it was about 500 feet lower and under these conditions, frailejons, one of the most characteristic paramo plants, grew abundantly almost down to the level of the trail. The pass, using this term in the broad sense to cover the higher parts of the trail between Bogotá and a point where the descent to Chipaque begins, lies in the Temperate Zone and though it is frequently



SLOPES ABOVE BOGOTÁ
Junction of Temperate and Paramo Zones.



THE ENVIRONS OF BOGOTÁ
View of the Savanna from the beginning of the trail to Villavicencio.
(Temperate Zone.)

referred to as paramo, it barely reaches the level at which true paramo begins. The prevailing winds are easterly and the clouds which have passed over the lower ridges to the east here give up their moisture, producing a climate marked by chilling winds with driving mist and rain.

The upper portions of the eastern slope above Chipaque are covered with dense, but rather poorly developed Temperate Zone forest, the last forest-growth through which the trail passes until one reaches the easternmost ridge in the range.

As one descends to Chipaque the forest, doubtless partly because of natural conditions and partly because of the demands of agriculture, gradually disappears. We were favored in securing quarters at an hacienda about a mile west of the town of Chipaque and some five hundred feet above it.

The avifauna here was characteristic of that of the Temperate Zone, a single specimen of *Gallinago nobilis* and one of *Cistothorus æquatorialis* taken at approximately ten thousand feet, indicated our proximity to the Paramo Zone above, while a single specimen of *Henicorhina leucophrys guttata* taken in the dense undergrowth bordering a deep ravine cut by the Cáqueza, illustrated the tendency of a lower zone fauna to penetrate the zone above along the protected banks of barrancas.

The absence of forests between the summit of the range above Chipaque and the most eastern ridges of the range, or approximately between 9500 and 4500 feet altitude, was a great disappointment to us, since it prevented us from securing a collection in the Subtropical Zone forests of the range. This is the most serious gap in our field work in the Bogotá region. Such forest doubtless exists in other parts of the range, but in the region traversed by us it was restricted to the summits of the higher mountains and ridges where, under the circumstances, it was not accessible. That its exploration would yield most interesting results for comparison with those obtained near Fusugasugá is indicated by the discovery of a new form of *Ostinops sincipitalis,* taken by Ring with much difficulty from a forest-crowned summit rising to 1000 feet above Monteredondo, and by the striking difference found to exist between the Jays of the genus *Xanthoura* inhabiting opposite slopes of the range.

At Quetame (alt. 4800 ft.), our next station, the trail continues to pass through an arid, treeless region with some tree-growth along the watercourses in ravines or lateral barrancas, and occasionally a crown of forest on some rounded crest high enough to receive moisture.

The first evidences of Amazonian bird-life were observed just east of Cáqueza, and about thirty miles from Bogotá where, at an altitude of 5500 feet, *Tanagra episcopus* was noted, and from this point it became increasingly common as we journeyed toward the Llanos.

The scarcity of arborescent vegetation at Quetame necessarily limited the numbers of species of birds found there. Altitudinally in the Subtropical Zone, only the scanty growth of timber along streams flowing into the Rio Negro itself furnishes a haunt for the tree-inhabiting species of this zone, but in such localities the few species secured were members of the zone in which Quetame is situated. Examples are *Xanthoura cyanodorsalis, Grallaria ruficeps,* and *Cinclus.*

But mingled with these birds were outlying representatives of the Tropic Zone below; for example *Planesticus ignobilis* and *Tanagra episcopus,* while on the grassy hillsides or along the hedge-rows such characteristic species of the Temperate Zone as *Sturnella meridionalis* and *Planesticus gigas* found their lower limit. At Quetame, then, although the avifauna was in the main that of the Subtropic Zone, representatives of both the zone below (Tropic) and zone above (Temperate) met, a condition we have not found elsewhere.

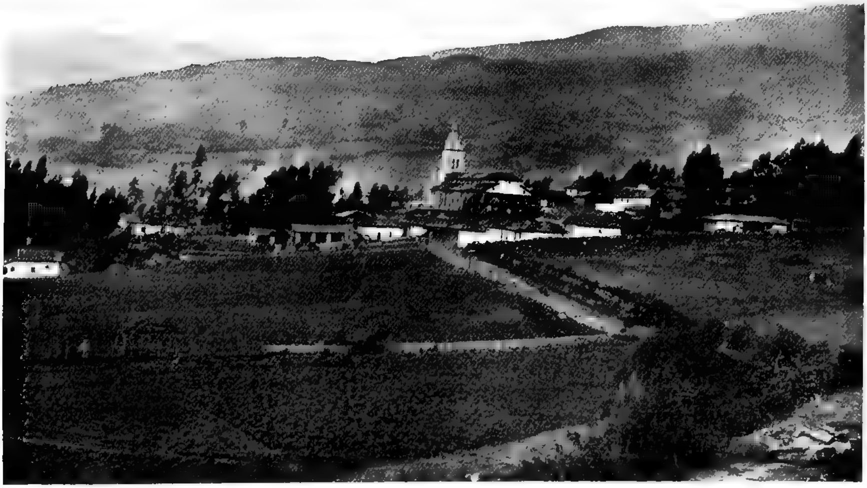
At Monteredondo, some five miles east of Quetame, but at about the same altitude (4800 ft.), arborescent vegetation was somewhat more developed and from this point it increased steadily in size and abundance. Ten miles further east the mountain slopes rising from the southern side of the Rio Negro were heavily forested from base to summit, here a matter of about 3000 feet, but the slopes on the northern side, or those having a southerly exposure, were still comparatively bare; a condition possibly due to the fact that the prevailing winds are northeast rather than southeast.

As we traveled eastward the forested areas continued to increase, the most eastern ridge of the range being covered with superbly developed primeval woods from the Llanos at their base to their crest (alt. 4500 ft.). On the western side, where the slopes reached the Rio Negro, now some 2500 feet below, the forest continued to the water's edge. In this region we made our base at the posada of Buena Vista, situated at the side of the trail on the summit of the ridge directly above Villavicencio lying some 3000 feet below at the base of the Andes.

Buena Vista was our most productive station. From the surrounding region have come many Bogotá skins. Within two hundred yards of the posada lie as finely developed tropical forests as I have ever entered; the trees are of exceptional height (averaging over one hundred feet), the forest floor is comparatively open. Numerous trails greatly facilitate the passage of the collector and I recall with unalloyed pleasure our experiences in this delightful locality.

The fauna of Buena Vista is mainly that of the Tropical Zone, with the addition of some species from the zone above. The fact, however, that the ridge reaches an altitude of only 4500 feet, and that there are no higher ridges nearby, evidently limits the number of Subtropical Zone representatives.

EASTERN ANDES BETWEEN BOGOTÁ AND CHIPAQUE
(Temperate Zone.)



CHIPAQUE
View looking west.
(Temperate Zone.)

As has been remarked, the eastern slope of the eastern ridge of the Andes is forested from summit to base. At the foot of the ridge which rises abruptly from the level plain at its feet, the forest of the mountain gives way to the grasses of the Llanos.

The environs of Villavicencio, to which our collecting was confined, are largely under cultivation. The original llano grasses have given way to Para and Guinea grass; various crops are cultivated; trees border the byways and are found in clumps on small areas in the bottom-lands. Somewhat farther east stretches of forest occur. The differences between the bird-life of Buena Vista and that of Villavicencio are due to the character of the country rather than to altitude. Doubtless had we collected in the forests at the base of the mountain, we should have found many species which we secured only at Buena Vista.

Bogotá to Fusugasugá.— Our disappointment in finding so little undisturbed, primeval country along the trail from Honda and the railroad from Giradot to the tableland was forgotten when we discovered the admirable conditions for collecting which exist between Bogotá and Fusugasugá.

As a region to which Bogotaños repair for climatic change, Fusugasugá is often thought of as a suburb of the larger city, a conception which is fostered by the apparent proximity of the two cities as seen on maps. It is probable, however, that, excepting a few raptorial species, not two birds are common to both places. Beginning our journey at Cibaté, at the southern end of the Savanna, it is doubtful if, even in Colombia, one could encounter more pronounced faunal changes than occur in the fifteen miles lying between that place and Fusugasugá.

Cibaté has the same altitude as Bogotá and, except to the south, the surrounding country, and doubtless its bird-life, are essentially similar; but within a few minutes after leaving the railway station, which marks the terminus of the twenty-miles of track constituting the Ferrocaril del Sur, one begins to climb the low hills which form the southern rim of the Savanna. Where not under cultivation, the ground is covered with a scrubby second growth which, within three miles, is gradually replaced by the low, stunted, moss-covered forest of the humid Temperate Zone. The ascent is now barely perceptible but it continues to the posada of El Piñon, at the extreme southern edge of the ridge dividing the Savanna of Bogotá from the slopes below it.

At this point the trail drops abruptly into the almost gorge-like valley which leads to Fusugasugá. On each side, and separated by less than a mile, stand the precipitous walls which flank the valley. Heated air from the broad, radiating surfaces of the semi-arid Magdalena plains below is drawn up this slit in the mountains and at El Piñon meets the cooler atmosphere of the tableland. Condensation ensues and in consequence the rainfall here, and in the valley immediately below, is doubtless unusually high.

Evidently for this reason, the forest of the Temperate Zone at El Piñon is more luxuriant than we have found it elsewhere, while the floor and where circumstances permitted, the sides of the valley below were clothed with heavy, subtropical forest broken only by artificial clearings until one reached a point some 1500 feet above Fusugasugá. From this point downward the forest has been cleared and replaced by the coffee plantations which surround the town of Fusugasugá.

Our nearest collecting station to El Piñon was El Roble, a posada 1000 feet lower down on the trail to Fusugasugá. Nowhere in Colombia have we found so great a faunal change in so short a distance as that which occurs between these two points. Indeed one has to go only a few hundred feet below El Piñon to pass from the Temperate, completely into the Subtropical Zone. So steep is the trail that one seems to be descending a flight of stairs. Within a dozen steps the rolling ground of the dividing ridge is lost to view, and one is at once protected from the chill winds of the tableland. Very quickly a striking change is observed in the vegetation as the larger, more open-limbed, liane-draped trees of the Subtropical Zone replace the smaller, thickly branched, moss-covered ones of the Temperate Zone.

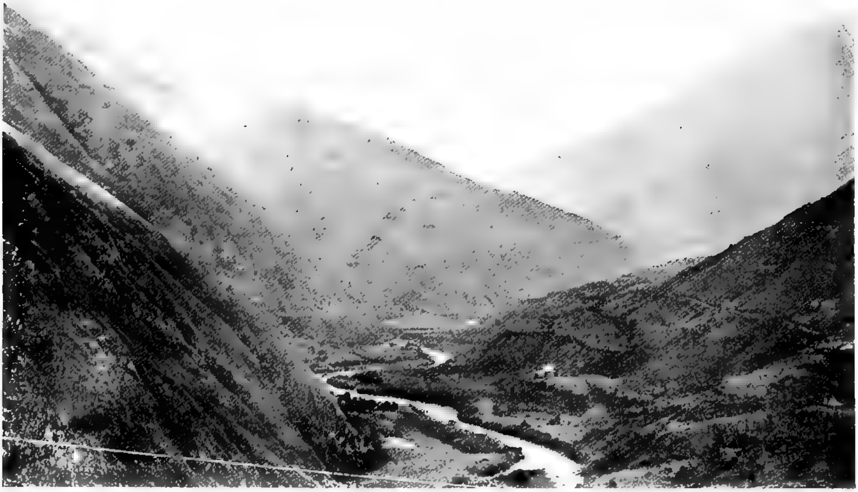
About 1200 feet below El Roble, we collected at a way-side posada known as Aguadita. The valley is here somewhat wider, but the heavy subtropical forest, essentially like that found at El Roble, and broken only by occasional clearings, still prevails.

A short distance below Aguadita the primeval forest ends and the coffee plantations begin and continue to and beyond Fusugasugá. While climatically in the Subtropical Zone, the clearing away of the original forest-growth has permitted a number of species characteristic of the semi-arid Tropical Zone of the Magdalena Valley to extend their range up the mountain slope. Examples are *Mimus*, *Tanagra cana* and *T. palmarum.* Our party was stationed only a day or two at Fusugasugá, collections being made from this point in the forests 1500 feet above the city.

Expedition No. 8.—The Antioquia Region. November, 1914–March 26, 1915.

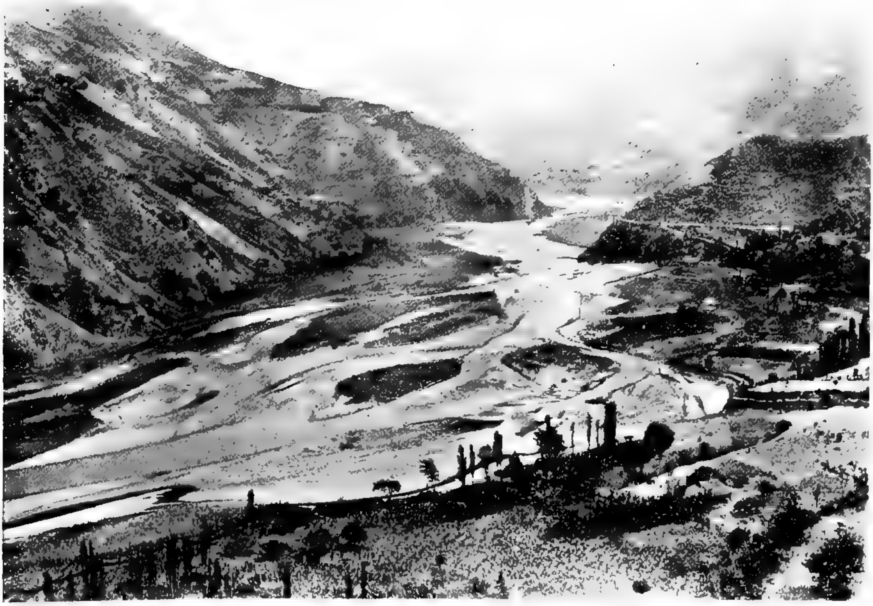
Personnel.— Leo E. Miller; Howarth Boyle.

Itinerary.— Miller and Boyle reached Medellin via the Magdalena River to Puerto Berrio, November 11, 1914. After establishing their base in this city they proceeded at once to Sta. Elena, one of Salmon's most important collecting stations, on the summit of the first ridge of the Central



Rio Negro from Monteredondo

Upper limits of arborescent vegetation in the Rio Negro Valley; Bogotá-Villavivencio Trail at the right.
(Tropical Zone; Orinocan Fauna.)



Junction of Rio Cáqueza and Rio Negro

A scene near Cáqueza. Bogotá-Villavicencio Trail leaves the floor of the valley at the right.
(Fusion of Temperate, Subtropical, and Tropical Zones.)

Andes east of Medellin. Here they worked from December 15 to 23, and then proceeded twelve miles further east to Barro Blanco remaining there from November 25 to 29. Returning to Medellin they collected for three more days (Dec. 1–4) at Sta. Elena and arrived at their base December 5.

In order to determine to what extent the fauna of the lower Atrato has reached the heavily forested portions of the lower Cauca region, the expedition left Medellin December 9 and reached Puerto Valdivia at the head of navigation on the Cauca five days later. Collections were made here until December 26, when the party retraced its steps to La Frijolera, some 5000 feet higher, working there from December 29 to January 4. About 600 birds were secured on this lower Cauca trip. These, in connection with Salmon's records from Remedios, Miller and Boyle's later work at Malena near Puerto Berrio, and some 300 specimens collected chiefly by the Bogotá expedition along the lower Magdalena, doubtless give a fair indication of the extent to which Pacific coast forms have entered this region. Returning to Medellin preparations were made for the ascent of the zoölogically unknown Paramillo, at the northern end of the Western Andes, the most important and most difficult piece of exploration planned for this expedition.

Medellin was left January 14, and Peque reached on the 19th. Here the mules were replaced by Indian porters, and after four days, which evidently made exceptional demands on the strength and perseverance of the explorers, the Paramo was reached January 23. Between this date and February 1, over 150 birds were secured. Several were new to science and the collection as a whole very clearly shows the character of this, the highest point found by us in the Western Andes. Most of the species belong to the upper Temperate rather than the Paramo or Alpine Zone; such characteristic Paramo species as *Phrygilus* and *Upucerthia* were apparently wanting. On the other hand, a number of species were taken which had been previously found on the crest of the Andes west of Popayan, the only other point at which we have discovered a Temperate Zone in the Western Andes. Chief among these is an excellent series of *Diglossa gloriosissima,* hitherto known only from the specimens secured by Richardson and Miller at an elevation of 10,300 feet west of Popayan. A fine series was also taken of *Diglossa brunneiventris,* previously found in Colombia only by Salmon at Sta. Elena, showing that the Colombian form is not separable from the Peruvian race.

The final work planned for this most successful expedition was on the Atrato slopes of the Western Andes. From the Paramillo, Miller and Boyle returned February 9 to Buritica, left this place on the 9th and reached Dabeiba, their first station, on the 11th. Collections were made here from

February 12 to 14, when they moved ten miles further down the river to Alto Bonito where, between February 16 and 23, they secured 255 birds. A two-day stop (Dec. 25–26) was made at Dabeiba in returning to Medellin.

Only two stations now remained to be visited; Malena near Puerto Berrio, selected by Miller as a favorable point on his way into Medellin, and La Playa, near Barranquilla. One hundred birds were taken at the first-named place March 9–11; and one hundred and five at the latter, March 23–26.

Description of Route and Collecting Stations.— The following notes are supplied by Mr. Miller:

La Playa:—"At La Playa, a few miles from Barranquilla, one enters a typical stretch of the Arid Coastal Zone. The country is level or gently undulating, sandy, and covered with a sparse growth of cacti and thorny shrubs. Toward the river vast shallow salt lakes, swamps and mangrove thickets abound.

"I was greatly surprised to find that the dry, sand-dune country contained an abundant and varied bird-life, while the green mangrove jungles were practically uninhabited. In the lagoons, Pelicans, Black Jacanas, Herons, Sandpipers and Anhingas are very abundant, and Terns occasionally pay them a visit.

"In the dry brush, large Wrens, *Synallaxis,* Pigmy Owls, Mockingbirds, *Thamnophilus,* Ground Doves, *Sycalis,* Orioles and Honey Creepers (sugar birds) form the characteristic avifauna; and occasionally one meets Buccos, Piculets, Woodpeckers and Herons, Parrots and Parrakeets. Many of the bushes are loaded with bulky nests; but they are well protected by the thorny branches, in spite of the fact that they are most conspicuous. One visit was made at the end of the breeding season, though some species were still with eggs and small young (March 23–26.)"

Malena:—"The first stop on the railway line beyond Puerto Berrio is the village called Malena, and as the locality appeared to offer ideal facilities for collecting, the expedition moved to that point March 10th and spent four days collecting in the surrounding forest.

"Malena contains perhaps forty huts, and is situated in the heart of the immense Magdalena forest. The forest is high consisting mainly of giant ceibas, with comparatively little undergrowth; the tagua palm is abundant. There is also an abundance of bamboo.

"Bird-life fairly teems along the edge of the forest, but in the woods there is little life except clouds of mosquitoes.

"During our visit there was but little rain and everything was dry. Birds seemed to adhere to the banks of the small streams and, with few exceptions, did not band together in flocks."

Puerto Berrio to Medellin:—" Coming up from Puerto Berrio, the heavy Magdalena forest extends up until only about 1500 feet, although patches of it ascend much higher, to the top of the lower foothills several thousand feet high; beyond the forest belt begins open brush and scattered forest country. Wild cane and bamboo jungles grow in profusion up to Cisneros, alt. 3700 feet, which is the end of the eastern stretch of railroad. Beyond Cisneros rocks appear — sandstone and granite, in boulders and outcropping ledges. By the time the highest point is reached (carriage road) at La Quiebra, altitude 5425 feet, the hills are practically bare. Coming down from La Quiebra toward Medellin the country is the same. The railroad again begins at Botero and follows the Medellin River to the city; the valley of this river is covered with a tall, slender willow growth which I have not seen in any other place in Colombia. The trees are like some seen about Popayan where a few have been planted along a driveway; but here they form a pretty compact forest."

Santa Elena and Barro Blanco:—" Santa Elena is an interesting place with an elevation of 9000 feet, which is the top of the ridge, although there are a few peaks near which reach to 9500 feet. The temperature ranged between 40° and 62°, and the vegetation reminds me much of the crest of the Andes west of Popayan. There are, however, a few patches of forest, but most of the country is grassy and brush-covered.

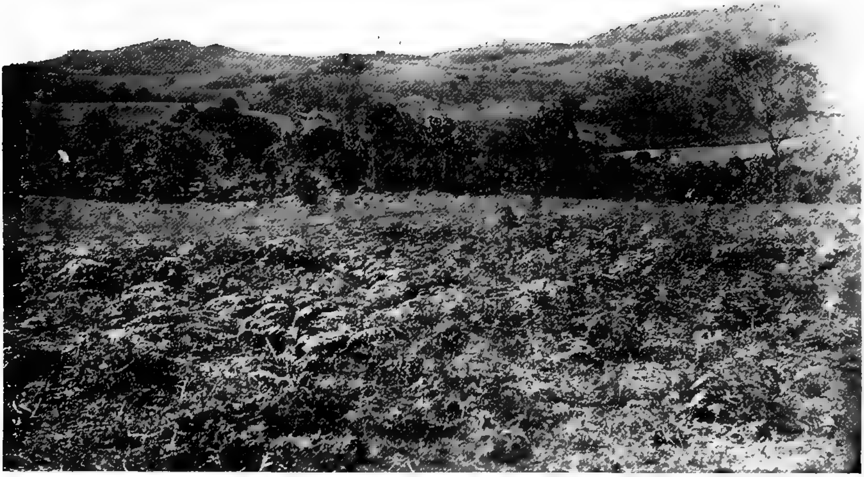
" Continuing toward Rio Negro (a large town) from Sta. Elena, a good trail goes gently downward into an immense, practically level plateau from 7000 to 8000 feet high. All of this is pretty well settled, devoid of forest, and cultivated; corn fields cover practically the whole region, with an occasional pasture and small area of brush. Beyond the plateau the peaks again rise about a thousand feet, with open or brush-covered sides and tops fringed with low forest. Barro Blanco (our camp) was at the foot of this hemming-in ridge. Although the altitude is 7200 feet, the heat at mid-day is intense. Tall fan palms grow, though in small numbers, and there are clumps of feathery bamboo. The fauna is quite different from that at Sta. Elena although some forms such as *Planesticus gigas* and *Brachyspiza* are abundant. It does not seem possible that this part of the Central Range was ever forested, that is, as heavily as the jungle we found at San Antonio, above Cali, although there are evidences that vast tracts have been cleared. All indications are that the mountainsides were to a large extent brush-covered with bushes, ferns, and climbing bamboo up to fifteen feet high, with clumps of low, rather open forest on the peaks. The soil for the main part is clay and rocky. December, January and February, June, August and September are the dry months; March, April and May, July, October, and November are the 'winter' months, during which it rains. Our experience is that there are pretty heavy showers in the late afternoon and rarely a rainstorm at night; the mornings were bright and cloudy, with low-hanging clouds until shortly after sunrise. Occasional gusts of clouds blew in during the mornings, but lasted a few minutes only. The prevailing wind was from the east."

Medellin to Puerto Valdivia:—"From Medellin we took the train to Barbosa, an hour and a half away; then we took mules. The trail at first goes up very abruptly from 4625 feet to 8100 feet, which point we reached at noon, three hours after starting. The country is barren of forest, although there are a few small patches of brush. The high plateau is rough and broken with many granite boulders strewn about. Santa Rosa, 9200 feet, seven leagues from Barbosa is a town of a few hundred houses, situated in almost desert country; there are numerous mines in the vicinity, and many diggings and tunnels are visible from the trail. This dry, desert country continues for about two leagues beyond Santa Rosa; then small patches of open, rather stunted forest begin and continue for three leagues, interspersed with llanos; this forest has little undergrowth, but the trunks and branches are covered with short yellowish moss; apparently there is not much rainfall. Woodpeckers (*Melanerpes*) abound in this semi-forested zone. Now follow two more leagues of almost barren country until the town of Yarumal, 7000 feet, is reached. Yarumel is a good-sized town, nearly as large as Santa Rosa. It rests on a steep hillside, so steep, in fact, that it is difficult to walk on the streets.

"About a league beyond Yarumal magnificent first-growth forest begins, and continues with minor interruptions only until Valdivia, six leagues away. This forest reminds me much of that at San Antonio, above Cali, and there is doubtless an abundance of rain; small torrents are also numerous. The altitude of Valdivia is 4200 feet. In the immediate vicinity of the town the forest has been cut away, but a mile beyond it again starts and continues down to the Cauca River. This lowland forest is as tall or taller, but has less moss, etc. than the high country forest. The distance from Valdivia to Puerto Valdivia is one and a half leagues. We made the trip from Medellin to the port in four and a half days.

"The Cauca, at Puerto Valdivia (alt. 360 ft.), flows directly between the Western and Central Ranges, without any valley whatever. The mountains slope up sharply right from the water's edge on both sides and are heavily forested except for a few small clearings where corn and cacoa grow, but the clearings are too few and far between to amount to anything.

"The climate was hot, the temperature often reaching 85°, but a daily breeze in the afternoon, blowing up the Cauca, cooled the atmosphere considerably. We had comparatively little rain. The rainy months are April,



COUNTRY NEAR STA. ELENA, CENTRAL ANDES
The original forest has largely disappeared.
(Fusion of Subtropical and Temperate Zones.)

WESTERN ANDES NEAR ANTIOQUIA
(Tropical Zone; arid portion of the Cauca-Magdalena Fauna.)

June, July, August, October and November, with violent wind and hail storms in July. The bird-life is abundant and interesting.

"On the return trip we stopped at a place called Frijolera (alt. 5000 ft.) just this side of the town of Valdivia, principally to collect mammals for which the country looked promising; here we took many more fine birds, and a good many mammals of numerous species."

Exploration of the Paramillo.— "The name Paramillo is applied to that lofty spur of the Andes jutting out of the western range slightly below latitude 7°. To explore this section the expedition left its base at Medellin on January 14, 1915, with equipment sufficient for about three weeks' actual field-work.

"The very good trail strikes toward the northwest, ascending the mountainside rapidly, so that four hours after starting we had reached the top of the range. A great cleft forms a natural pass 8750 feet high, and saves a climb of at least an additional 1000 feet. The slope on the other (western) side is more gentle.

"We were immediately impressed with the barren nature of the country for, with the exception of a few patches of low brush and the clumps of withered grass, no vegetation was to be seen; and an occasional glimpse of the Cauca River far below suggested the picture of a broad yellow ribbon lying upon a brown, rocky plain.

"That night we reached a small town called San Geronimo, elevation 3200 feet. Near the town small patches of ground are irrigated with water brought from mountain brooks and distributed through a network of artificial ditches; in these spots rice, corn and pasturage grow but rather scantily on account of the rocky nature of the soil.

"Next morning we were on the road before six; a few hours later, on crossing the top of a small ridge, we came suddenly upon the town of Sopetrán completely hidden in a fertile little valley filled with palms, mangoes, and other beautiful trees; the cluster of some hundreds of neat white houses with red tile roofs, the well-kept streets, and the multitude of birds fluttering among the deep green foliage rendered Sopetrán quite the most attractive town of its size I have seen in Tropical America. At noon we reached the Cauca and crossed that sluggish, muddy stream on a well-built suspension bridge probably 800 feet long. Gravel banks flank the sides of the river, and bare sandy islands divide its waters; the elevation at this point is approximately 2000 feet. One league beyond the Cauca lies the town of Antioquia, altitude 2600 feet. The valley of the Cauca is here five to ten miles wide, rolling, and supports no vegetation except occasional clumps of mimosas and cacti which rather add to its desert-like appearance. The high ranges of the Western and Central Andes hem it in like huge walls of pink clay and sandstone.

"January 16, we reached Buriticá. Immediately after leaving Antioquia, a mere ledge of a trail begins the ascent of the Coast Range, and while the safety of the two pack animals caused a good deal of anxiety, it was nevertheless a relief to escape from the intolerable heat of the low country. The altitude of Buriticá is 6200 feet.

"On account of the jaded condition of the animals, we spent the morning of January 17, at Buriticá; we took advantage of this time to divide the equipment, leaving such material as we expected to use on our subsequent visit to the Rio Sucio. Leaving at noon, we reached a small settlement known as Tabocal, altitude 5400 feet, at 5 P. M. We could now no longer see the Cauca, our view having been shut off by a ridge of mountains several thousand feet in height which rises out of the valley between the ridge we were on and the river. A slight change was perceptible in the character of the country; extensive areas covered with low brush dotted the otherwise barren landscape, though far apart; and on the extreme tops of both ranges a thin fringe of green could be distinctly seen.

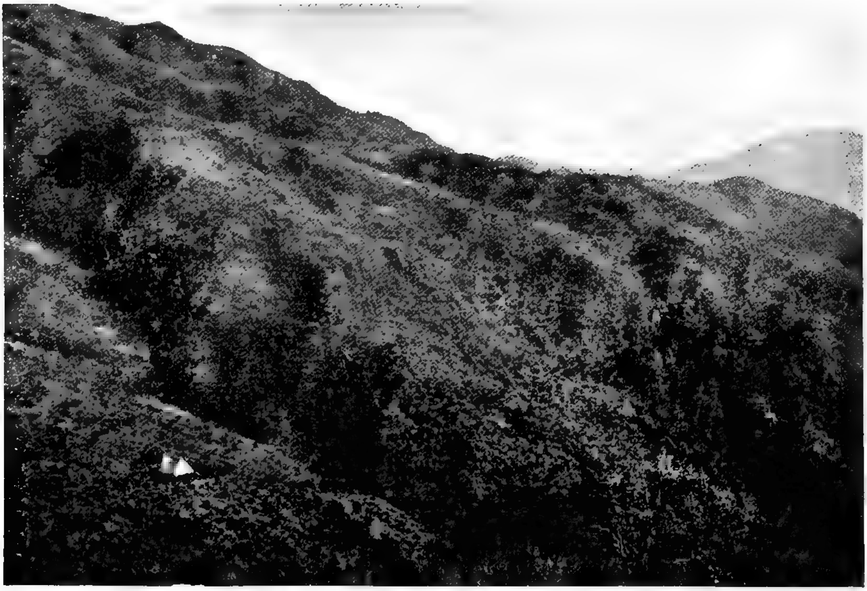
"Beyond Tabocal the country is extremely broken, there being frequent rises and descents of 2000 feet; and several separate mountains, not connected with the main ranges, stand here and there like huge monuments, rising from a basal elevation of 3000 feet to 8000 or 9000 feet, which naturally magnifies their already impressive proportions.

"Late in the afternoon of the 18th, we reached an altitude of 8000 feet and entered a fine strip of forest, the first we had seen since leaving Medellin; this is the beginning of the forested zone, which examination showed to be at an equal height on both the Central and Western Ranges, and to continue to the tops, which appear to rise to an altitude of 9000 feet or more. The night was spent at an Indian hut called La Meseta, altitude 7900 feet, just below the forest belt, and situated in the midst of an extensive strip of maize.

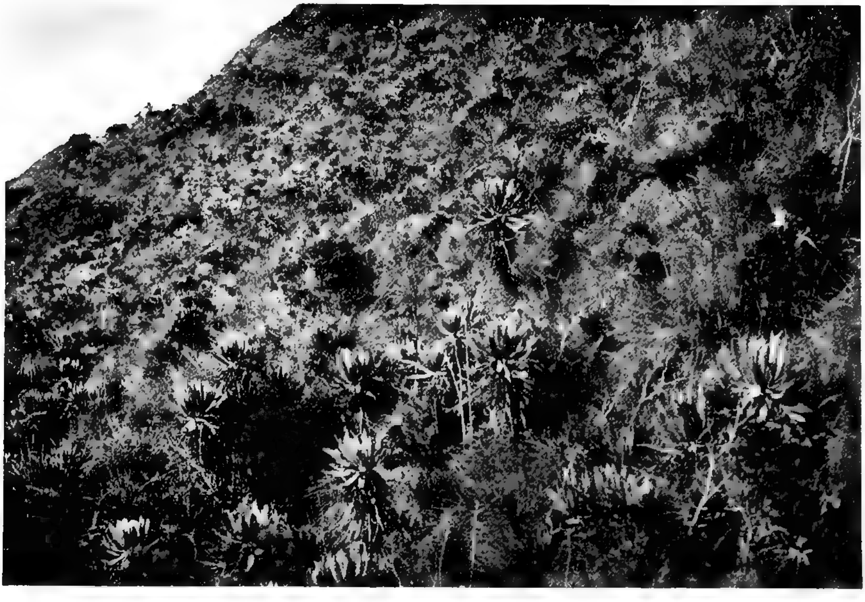
"Peque, the end of the journey by mule, was reached at noon on the 19th. After leaving La Meseta the trail goes down abruptly; the town has an altitude of only 5000 feet.

"Peque boasts of about fifty decaying mud huts and its population is mostly of Indian descent, including some pure-blooded Indians; one of the latter, Julian David, received us most cordially and rendered us every possible assistance in securing the porters for the ascent of the Paramillo.

"Some of the country surrounding Peque once doubtless bore a light forest growth, with heavier forest in the ravines; but by far the greater part is naturally bare or covered with a dense growth of brush. I was told that at the time of the Spanish Invasion, 40,000 Indians inhabited this region; and as there are several mountain streams supplying an abundance



THE PARAMILLO, WESTERN ANDES
Camp of Expedition No. 8 at left; alt. 12,500 ft.
(Paramo Zone.)



CHARACTERISTIC VEGETATION ON THE PARAMILLO
(Paramo Zone.)

of fresh water and the soil responds fairly well to cultivation, there seems to be no reasion why it should not have supported an extensive population.

"The forest zone which, as stated before, begins at La Meseta, at 8000 feet, gradually extends its limits downward as we go farther north, until at Peque it reached as low as 5000 feet in the deeper and well-watered ravines; and as previously reported, at Puerto Valdivia it reaches the very edge of the Cauca.

"We secured four half-breed porters to carry the equipment; and as there was no trail to the Paramillo, a fifth man was secured to go in advance and clear an opening with his machete.

"On the 21st we started at 6 A. M., following a short trail that led to a lonely hut known as El Madeiro; this three hours' walk took us through country covered with large areas of tall brush, blackberry briars and guavas, with occasional patches of forest, some of which had recently been burnt. Arriving at El Madeiro (8000 ft.) we plunged into the magnificent forest, going in a due westerly direction; it was our plan to follow along the top of an undulating ridge, which one of the men said was the shortest and easiest route.

"At first the forest was fairly penetrable, but soon it assumed the character of the well-known San Antonio (above Cali) jungle, being composed of a solid wall of moss, ferns, creepers and epiphytes which burdened every tree-trunk and branch.

"On account of the long climb, we made camp at 3 P. M., at an altitude of 10,000 feet, having ascended 5000 feet in eight hours actual marching. Water was obtained in a ravine over 1000 feet lower down on one side of the ridge, and I may here add that this was the only water we had until reaching the Paramillo, so that we went nearly two whole days without drinking.

"The second day's march we had hoped would be over a gentler slope; but it was soon discovered that our ridge was composed of a succession of knolls rising from 500 to 1000 feet above the main level, and the forest grew denser constantly. We had to cut practically every foot of the way. In places we actually walked over the top of the masses of vegetation; the branches were a solid tangle of creepers, climbing bamboo, bromelias and mosses, and formed spongy aërial bridges; more often it was easier to burrow through, and frequently 'tunnels' many yards long were cut through which the carriers crawled on hands and knees. The tops of some of the hills were void of trees, their place being taken by a dense growth of grass-like bamboo, wild oleander, thick-leaved shrubs, and thickets of a tall, coarse grass with leaves eight feet tall and six inches wide. We camped this night 11,350 feet up; the men eagerly cut down clumps of bromelias hoping to obtain water, but all the leaves contained were a few drops of liquid mud, utterly unfit for use. Although we travelled steadily for ten hours, I doubt if we covered more than three miles.

"A few hours after starting on the morning of January 23, we emerged suddenly from the dark forest; instead of the tall, overburdened trees, there were extensive areas of bushes, evergreens, stunted pines, and plants with thick, round, rubbery leaves, interspersed with clumps of tall, rank ferns. Beyond stretched the bleak, wind-swept surface of the Paramo.

"The Paramillo region is composed of a series of sharply inclined peaks, the highest of which attains an elevation of 13,000 feet, interspersed with ravines and deep fissures. The surface consists mainly of dark sandstone which in many places has been shattered so that a thin litter of the particles cover the basal rock; occasionally a thin vein of white quartz crops out, especially where, as often occurs, the strata stand in a perpendicular position. Water there is none; we discovered but one small trickling brooklet; but at the bottom of one of the crevices several pot-holes were found, each containing several hundred gallons, and apparently remaining perpetually full.

"Each night the temperature fell to 28°, and ice formed in our pails half-an-inch thick; in the morning the ground was white with frost. On the evenings of January 28, 29 and 30, there fell very slight, short showers of rain. The prevailing wind came from the west.

"The vegetation is of a typical paramo character, consisting of low clumps of 'frailejones,' blueberry bushes and tough grass. In the ravines there are thick bushes and stunted trees, all heavily moss-covered.

"The vast expanse of level grazing country, and the broad marshes and sphagnous areas so common to Sta. Isabel and El Valle de las Pappas were conspicuously absent.

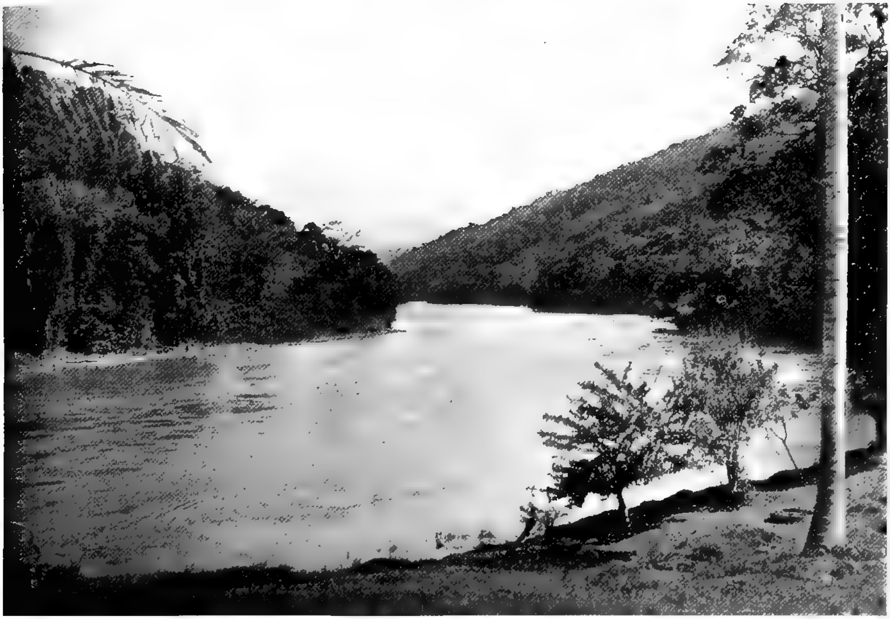
"Naturally, country of this character is not very well adapted to the support of an extensive fauna. Birds were extremely scarce, and strange to say, exceedingly wary.

"On all sides, excepting a break toward the west, the Paramillo is surrounded by ridges, some reaching an elevation of 12,000 feet, the tops of which are covered with dense forest, so that it stands like a mountainous, brown island amid the sea of green. The Paramo of Frontino could be seen about twenty or twenty-five miles to the southwest, in a separate ridge, not directly connected with the Paramillo."

Buritica to the Rio Sucio.— "After completing the work on the Paramillo, we returned to Buritica, which place was reached February 7, and on the 9th we began the trip to the Atrato drainage.

"Crossing the Western Range was comparatively easy, as the trail is excellent; we reached the top four hours after leaving Buritica, the altitude

Alto Bonito, Rio Sucio
(Tropical Zone; Colombian-Pacific Fauna.)



Rio Cauca at Puerto Valdivia
View looking north, near the southern limit of forest on the lower Cauca. The Central Andes arise from the right hand bank, the Western Andes from the left. At no other place do these ranges so closely approach each other.
(Tropical Zone; Cauca-Magdalena Fauna.)

of the pass being 8000 feet. Then the trail winds steadily downward, adhering closely to the sides of the Rio Cañasgordas (Rio Sucio). We spent the first night at the town of Cañasgordas, altitude 5000 feet, a settlement of perhaps 5000 people, and next day reached a house called Orobajo, altitude 3225 feet. The river which begins as a small spring just this side of the summit of the range, here attains a width of two hundred feet and is a raging torrent, the muddy water leaping and dashing over a bed strewn with huge rounded boulders of granite. Along the banks grow strips of dense bamboo, wild cane and brush interspersed with small patches of cultivated ground; these strips of verdure do not exceed a few hundred yards in width, and beyond that the country is bare or covered with short, thin grass. This was a surprise to me as I had expected to find the whole west slope heavily forested.

"We reached Dabeiba late on the 11th; as we reached the summit of the last little knoll, a beautiful panorama was spread before us; a perfectly level valley several miles long and a mile wide, covered with light green vegetation lay at our feet; in the center stood a cluster of forty or fifty white huts — the town of Dabeiba. Here and there a white area contrasting strongly with the green, marked the location of a cotton field; and through the center of the valley flowed the Sucio, now swollen to a rapid, muddy stream a few hundred feet wide. The sides of this valley are hemmed in by successive bluffs of sandstone, rising one above the other and at some distance apart, and I could never quite convince myself that this region had not once been covered by a good-sized lake.

"Dabeiba marks the beginning of the coastal forest zone; the change from open country to forest is not gradual, but sharply marked. After collecting in this locality three days we accepted the invitation of an acquaintance and moved to his house, called Alto Bonito, ten miles down the river from Dabeiba. At the latter place the altitude is 2000 ft.,[1] and Alto Bonito is 1500 ft. Primeval forest covers all the surrounding country and the abundance of bromelias, ferns, and parasites indicates an abundant rainfall, although there is little underbrush.

"Eight days were spent at Alto Bonito, and a great many specimens secured that were new to us; but a large percentage were identical with those collected at Puerto Valdivia.

"The work at Alto Bonito provided the last link in the chain of facts regarding the forested areas of northwestern Colombia, together with facts concerning the extension of the mountain ranges.

"The Western Cordillera terminates in the Cerro Aguila, just below

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[1] I am convinced that our aneroid registers at least 500 ft. too high; but I have given its readings throughout, except at Puerto Valdivia and at La Playa (Barranquilla).

9°, on the Golfo de Urabá, altitude less than 1000 feet. Gradually, north of the Paramillo, the range becomes lower and lower; in lat. 7½°, the highest peak, called Alto Esmeralda, does not exceed 4000 feet; and the Abibe, a few miles further north, attains an altitude of only 3600 feet. Beyond this the range is described as being mere hills.

"A new road has just been completed from Turbo on the Gulf of Urubá (Darien) to Monteria, on the Rio Sinú. This cuts right across the country about which we know the least, and I was interested to learn two facts:—the highest point in the road is 800 feet, and, every mile of the distance was cut through heavy, primeval forest. This, it would seem, provides for an easy passage for Atrato forms to the Cauca, at least to such forms (forest) which can ascend up to 800 feet; and this the collections from Puerto Valdivia and Alto Bonito should prove. However, I believe that forms which adhere strictly to the coast country, that is to the forest growing in the perpetual rain-belt, would be barred to a great extent from entering the Cauca, for, from all I can learn, the Cerro Aguila extends to the very coast notwithstanding that it is not so marked on our map.[1]

"After having entered the forests of the Cauca, there should be no obstacle to prevent birds entering the Magdalena forests, via the mouth of the Cauca and the San Jorge which furnish a natural connecting link."

AUXILIARY COLLECTIONS.

Satisfactory determination of the specimens secured by our expedition in Colombia has been greatly facilitated by comparison with collections already existing in the Museum, or with others which have been recently made primarily for use in this connection. Under the first head should be mentioned the Lawrence Collection with its numerous types, and, particularly, the H. H. Smith Santa Marta collection. This contains some 3000 specimens of about 300 species collected chiefly in the Tropical and Subtropical Zones of the Santa Marta mountains.

Under the second head, a collection made in 1912–1913, in Ecuador by W. B. Richardson, is deserving of first place. This contains some 4000 specimens including much topotypical material. Second place is accorded to a collection of some 1800 specimens made in eastern Panama by Richardson, H. E. Anthony and D. S. Ball. These collections have been of the utmost value in identification and in distributional problems.

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[1] This information was given to me by Sr. Cspinos, Director of the School of Mines in Medellin; and also by Ernesto White who was building the road I wrote you about.— L. E. M.

When our own collections lacked the specimens needed to answer the question at issue, an appeal to allied institutions or to collectors has rarely failed to produce them.

The Batty Collection.— In 1898, the American Museum purchased from the late J. H. Batty 290 bird skins which had been collected by him in the region about Cali. The specimens are fully labeled, but I have been able definitely to locate only a few of the places at which they were taken, and with some exceptions they are therefore not listed in this paper. It should be added that the collection contains only one or two species not obtained by our Museum expeditions. It was through this collection and information secured in many long talks with Mr. Batty that I was first attracted to the Cauca Valley.

The Mrs. Kerr Collections.— In 1908 the American Museum purchased from an American woman, Mrs. Elizabeth L. Kerr, one hundred and ninety-four bird skins which she had collected in Colombia west of Honda, in the Magdalena Valley, and on the eastern slopes of the Central Andes up to an altitude of 3000 feet.

Later Mrs. Kerr was commissioned to collect specimens in the Atrato Valley, and the two hundred skins secured by her and listed under the localities she visited are the only ones we have secured from this region, except those taken by Miller and Boyle at Dabeiba and Alto Bonito.

The Hermano Apolinar Maria Collections.— Through the cordial relations established by our Expedition No. 7 with Hermano Apolinar Maria, Director of the Instituto de la Salle of Bogotá, we have since received from him a number of small lots of birds from the Bogotá. Some have been collected at our request, some have been sent for identification, some in exchange, others as a donation. They have included a large proportion of rare and interesting species. Brother Apolinar's coöperation has been especially valuable in securing specimens of species but poorly or not at all represented in the collections made by our Expedition No. 7.

The Gonzales Collections.— Manuel Gonzales, a native of Bogotá, while employed as a general helper by our Expedition No. 7, was taught to prepare bird skins. A collecting outfit was left with him and he subsequently sent us some six hundred specimens, chiefly from the region about Bogotá, but including also seventy-nine from Barrigon at the head of navigation on the Meta. The localities visited by Gonzales, with the number of specimens collected at each are listed in the Gazeteer.

An Outline of Colombian Topography.

Detailed descriptions of Colombian topography, so far as we are familiar with it, are given in the itineraries of our various expeditions and in the characterization of the zones and faunas proposed. The physical, and zoögeography of the country is also presented in the accompanying maps. But at the risk of some repetition, it is proposed to present here an outline of Colombian physiography emphasizing those features which are of special importance in the study of the distribution of its life.

It should be observed that in Ecuador the Andean system is, faunally, composed of but one range with, consequently, but one Pacific and one Atlantic slope, and one Temperate Zone bordered on each side by the Paramo Zone islands of the higher peaks. But shortly after crossing the Colombian boundary this great range branches into three clearly defined ranges, each one of which is separated from its neighbor by a valley which descends to the Tropical Zone. The Magdalena Valley, lying between the Eastern and Central Andes, is never less than thirty miles in width and, in its lower part, much wider. The Cauca Valley, lying between the Central and Western Andes, from somewhat north of Popayan to north of Cartago has a width of twenty to thirty miles, but in Antioquia it is contracted to the width of the Cauca River from the eastern and western banks of which the Central and Western Andes respectively arise.

Except in this region, therefore, the three ranges of the Andes in Colombia nowhere approach one another, and at no place do their upper life-zones — Subtropical, Temperate, and Paramo — come into contact with the corresponding zone of the neighboring range.

It should further be noted that all three ranges terminate in the Tropical Zone, the Western and Central in Colombia, the Eastern in Venezuela. It follows, therefore, that their three upper zones end, as it were, in the air; that is, at their most northern part, they have no such connection, through gradual descent of zonal boundaries with increasing south latitude, as, for example, exists between the Temperate Zone in Colombia at from 9500 to 12,000 feet, and the Temperate Zone in Argentina at sea-level.

The Western Andes have no peaks reaching to snow-line, and we know of only four points at which they enter the Temperate Zone, one of which, the Paramillo, is near the northern end of the range. There appear to be no passes below 4900 feet (Cresta de Gallo, 4924 ft.), the average elevation is approximately 7000 feet, and the summit of the range is therefore usually in the Subtropical Zone.

The Central Andes have a number of snow-crowned peaks; Paramo

Zone islands are not infrequent, I know of no pass below 10,000 feet, the average height of the range may be said to be about 11,000 feet, and its summit is therefore largely in the Temperate Zone.

The Eastern Andes also possesses several snow peaks and numerous Paramo Zone islands. So far as we have learned, at only one point, until one approaches the northern extremity in Colombia, do they fall below the Temperate Zone, the pass at Andalucia between the upper Magdalena Valley and the Caquetá region having an altitude, as determined by Miller, of only 7000 feet.

In addition to these main branches of the Andean system, all of which are connected at their base north of the Ecuadorian boundary, Colombia possesses three other mountainous areas; the Baudo-Panama, what may be called the Amazonian, and the Santa Martan. The Baudo mountains, lying west of the upper Atrato form the true Pacific Coast Range. They are said to attain an altitude of 5500 feet, making their summit subtropical. In discussing the northward extension of the Subtropical Zone into Central America, evidence is presented which is believed to indicate that this range once possessed a greater altitude connecting it with the mountains of the Panama boundary at the north, and Western Andes at the south, at which time it formed a fourth Colombian branch of the Andean system on which the Subtropical Zone was carried into eastern Panama.

Little is known about the mountains lying east of the Eastern Andes on upper Amazonian drainage (as before remarked), but I can find no evidence of their having an altitude of over 3000 feet, and if this be true, they do not reach above the Tropical Zone. Hamilton Rice[1] writes that the Sierra Chiribiquete "may be a counterfort thrown out from the Suma Paz, and is a chain of crag-like peaks and hog-backs rising to an altitude of over 2800 feet." He doubts the existence of the Tunahi or Padavida range, shown by Codazzi.

The zoölogical evidence supports the geological belief that the Santa Marta mountains are of independent formation and have had no connection with the Andes. As such, the life of this group above the Tropical Zone, is insular and the study of the geographical origin of its forms is a clearly circumscribed problem, supplemental to that presented by the life of the main Andean chain.

Aside from these smaller mountain groups, it is obvious that the extension, almost the entire length of Colombia, of three distinct, high mountain ranges, effectively cuts up the Tropical Zone through which they pass into several sections each of which is more or less segregated from the other.

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[1] Geog. Journ., 1914, p. 144.

Thus, the great region lying east of the Eastern Andes, the western extension of the Amazonian and Orinocan basins, is separated by this range from the Magdalena Valley.

This valley, in turn, is walled about by the Eastern and Central Andes and, so far as tropical life is concerned, is accessible only at its northern end.

The Cauca Valley is similarly isolated and is open only at the north, while the Pacific coast region is shut off at the south by the deserts of southern Ecuador and Peru, and at the east by the entire Andean system. Like the Magdalena and Cauca Valleys it, too, is apparently to be entered only at the north. Tropical Colombia, therefore, may broadly be spoken of as consisting of the western portion of the Amazon-Orinoco Basins and three *cul de sacs* which debouch on its northern coast.

To what extent existing faunal conditions are dependent on existing topography, and to what extent they have been brought about by what may be called pre-Andean topography, remains for us to determine.

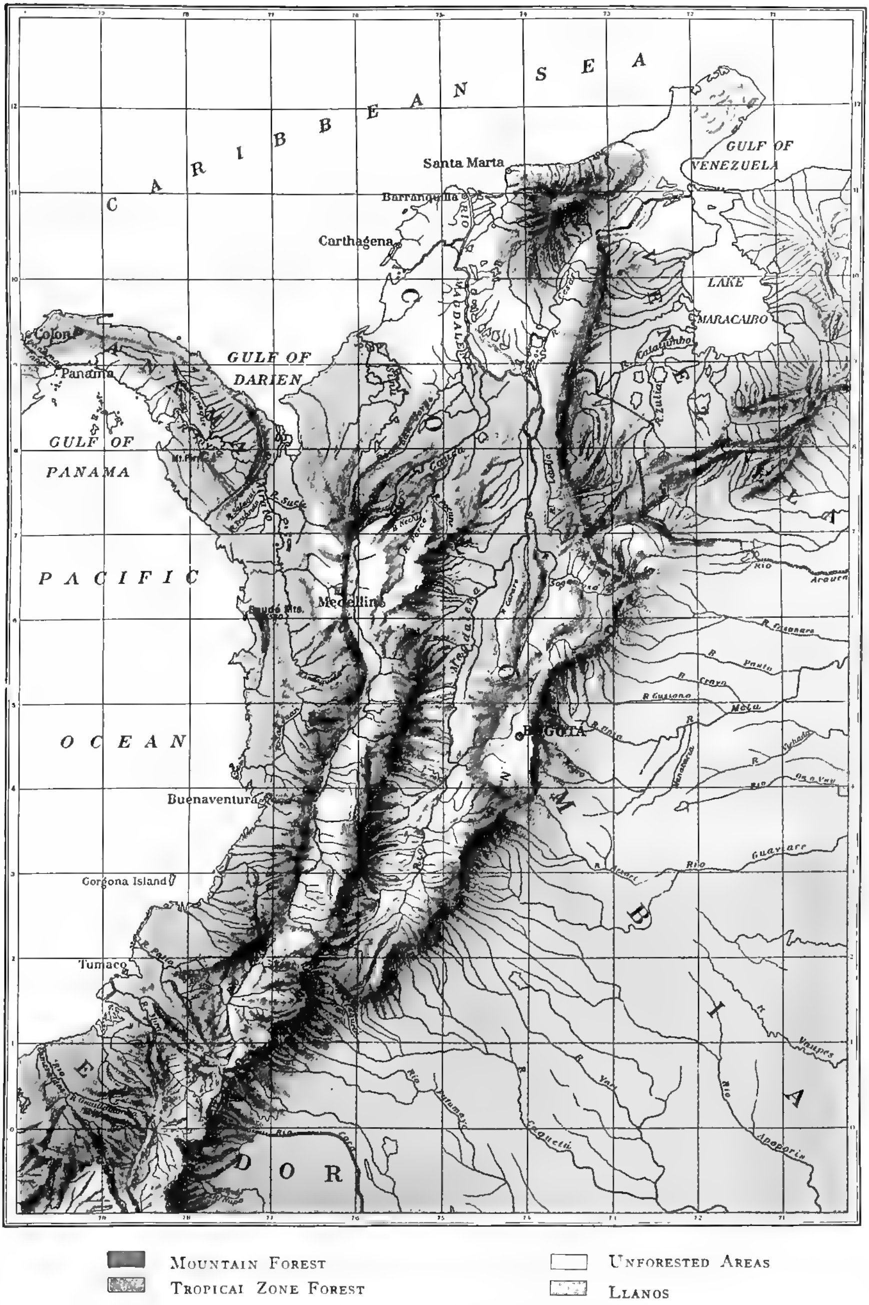
REMARKS ON THE DISTRIBUTION OF FORESTS.

The detailed information which we gathered in relation to the distribution of forests in Colombia will be found in the descriptions of the routes traversed by our expeditions, as well as in the Gazeteer. We covered, however, so comparatively little ground, and conditions change so abruptly, that data are lacking for anything but the most generalized statements in regard to the extent of the forest areas of Colombia as a whole. The presence or absence of forests, however, has so important a bearing on the boundaries of faunal areas, that from the zoölogist's point of view, even generalized statements are of value.

The Forests of the Tropical Zone.— The Tropical Zone possesses five large areas of heavy, humid forest. Named in order of their importance they are (1) the Amazonian; (2), the Pacific coast; (3), the lower Cauca-Magdalena; (4) the Maracaibo Basin, only the western portion of which enters Colombia, and (5) the Santa Martan.

The Amazonian forest region occupies all that part of Colombia lying east of the Andes and south of the Rio Guaviare. Its northern boundary, therefore, lies just north of the divide between Amazonian and Orinocan drainage. It forms, in fact, the northwestern corner of the vast forests of upper Amazonia which, southward, reach to Bolivia.

Miller (Expedition No. 5), writing from an elevated position near Florencia says "one has a good view of the Caquetá country, a perfect ocean of forest stretching out ahead as far as the eye can see, which, on clear days,


CARIBBEAN SEA
GULF OF VENEZUELA
Santa Marta
Barranquilla
Carthagena
RIO MAGDALENA
LAKE MARACAIBO
Catatumbo
R. Zulia
VENEZUELA
Colon
Panama
GULF OF DARIEN
GULF OF PANAMA
R. Cauca
R. Sucio
R. Nechi
Medellin
Baudó Mts.
PACIFIC OCEAN
Rio Arauca
R. Casanare
R. Pauto
R. Cravo
R. Cusiana
Meta
BOGOTA
Buenaventura
Gorgona Island
Tumaco
R. Patia
COLOMBIA
Rio Guaviare
Vaupes
Rio Apaporis
R. Yari
Caquetá
Rio Putumayo
Rio Napo
ECUADOR
Mountain Forest
Tropical Zone Forest
Unforested Areas
Llanos

DISTRIBUTION OF FORESTS IN COLOMBIA

is many miles. The sight is most impressive. There is not a single rise visible and the forest is of uniform height."

Dr. Hamilton Rice writing from a point west of the Sierra Chiribiquete (Lat. 1° 10′ 16″; Long. 72° 12′ 34″ and therefore slightly south of east from Miller's station) says:[1] "From this high land the Chiribiquete was seen to extend southeast as far as the eye reached, the rest of the country being undulating and forest-covered. . . . Occasionally the forest gave place to a dense growth of bush (rastrojo), a wild tangled thicket, difficult to get through, on a bottom of black, boggy mud, and especially hard on the carriers." The same writer (*l. c.,* p. 144) also refers to the densely forested plains of the Inirida and Uaupes, while his description of the transition from the Llanos north of the Guaviare to the forested region south of it (*l. c.* p. 145) I quote in full:

"In passing from north to south across such a stretch of country as that between San Martin and the Caquetá district, one may note differences of Amazonian vegetation characteristic of each different level of land. First there are the grassy savannas or campos with their knolls, glades, thickets, and scattered scrub; then the vegetation of the lowlands or rebalsa edging the rivers and inundated in the wet or winter season; next the forests of the low plains or monte bajo, which when seen from above appear more evenly topped and lighter than the woods on land above the highwater mark (monte alto), which are known as Virgin or Primeval forest. On closer inspection the trees of the low plain are seen to be lower and more scattered than those of the high land, without any great abundance of palms or lianas, but with a profusion of ferns. In the Virgin forest the trees are densely packed and high, from which emerge solitary individuals still more lofty, overtopping even the highest palms, and from whose massive masts are spread diverse forms of crowns and summits, dome, pyramidal, and candelabra, the whole interwoven by an intricate meshwork of lianas and vines. The vegetation of the rebalsa near the river bank is often low and bushlike, but gradually increases in height, the further it is from the bank, until, at the point to which the highest floods reach, it almost rivals the trees of the monte alto in height."

The Pacific coast forest extends from northwestern Ecuador northward to eastern Panama, and from the shore-line eastward to the forests of the Subtropical Zone, or to the summits of outlying ridges. Under the condition first-named the entire Pacific slope of the Western Andes from sea to summit is covered with unbroken forest, such, for example, as Allen and Miller (Expedition No. 3) found on their section from Cartago to Nóvita.

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[1] Geog. Journ. August, 1914, p. 150.

Under the second-named condition, the continuity of the forest is broken by such an arid pocket as we found at Caldas, or Miller and Boyle encountered above Dabeiba.

At the northeast, on the right side of the lower Atrato, the Pacific coast forest apparently connects with that of the Cauca-Magdalena, and this is the only connection of which we definitely know between any of the forested areas of the Tropical Zone. Mr. Douglas Fyfe, an American engineer, situated in northern Colombia, writes me of the country at the border of the Colombian-Pacific forests and the Caribbean Savannas: "The Sinú is a wide, sluggish stream meandering through a broad plain of very deep alluvium. Along its banks are situated beautiful grass-covered cattle ranges. The river is carrying a vast amount of sediment and gradually setting up a large area at its mouth forming deltas and reed swamps. Numerous waterfowl seem to inhabit these swamps the year around. The country lying east of the Sinú for about twenty miles is low-lying and under water part of the year; cienagas in fact. Beyond this lie the savannas. The country west of the Sinú is entirely forested to the Pacific coast, the forest beginning at the Atlantic sea shore and extending inland without a break to the interior."

The differences between the forest of the lowland and that of the foothills are well described by Allen in the narrative of his journey with Miller just alluded to. In connection with the change in gradient, character of the soil, etc., we have here two widely varying types of environment which doubtless account for the fact that some species appear to be confined to the bottomlands.

The Cauca-Magdalena forest is contained chiefly in the Department of Antioquia. Miller's exploration and inquiries show that it extends from the northeastern border of the Pacific coast forest northward to the Caribbean coast and thence eastward to the shore of the Rio Sinu, when it meets the western border of the marshes which pass into the Caribbean savannas. Thence it extends southward up the lower Cauca, and doubtless also the Nechē, to about Lat. 7°, and up the Magdalena Valley to La Dorada on the Magdalena River, where, on the valley floor, it terminates abruptly and is succeeded by the Savannas of the upper Magdalena. Along the foothills of both the Eastern and Western Andes, the forest extends south of La Dorada. Northward, in the Magdalena Valley, it is bounded on the west by the San Jorge and on the east by the foothills of the Eastern Andes, while its northern limit lies near Banco. Eastward of this point, it may occupy the foothills of the Sierra de Motillones and Sierra del Valle de Upar, at the northern end of the Eastern Andes, but I have no definite information in regard to this region. Whether the Cauca-Magdalena forest is connected with that of the Maracaibo Basin, remains therefore undetermined.

The presence of heavy tropical forest in the southern part of the Maracaibo basin has been made known to me by W. H. Osgood and Ned Dearborn, both of whom have visited this region in the interests of the Field Museum. As above remarked, I do not know whether this forest is connected with that of the lower Magdalena Valley by a belt of foothill forest, such, for example, as we found above Villavicencio; but at the east it appears to be bordered by the arid coastal region and Venezuelan Andes. It seems, therefore, to be an isolated area; nevertheless, it lies at the door through which many species have entered the Cauca-Magdalena fauna. Its connections to the eastward are of much importance, but I have no information concerning them.

Of the Santa Marta forest, M. A. Carriker, Jr., our authority on that region, writes me that on the Carribbean or northern side, from about Cabo de San Juan de Guia, to a point known as Camarones, the forest of the Sierra Nevada extends right to the coast. He adds: "Whether there is any forest connection between the Sierra Nevada and the Cerros Negros (Eastern Andes) on the watershed between the Rio Hacha and Rio Cesar, I do not know; most likely there is some such connection, although I am not of the opinion that it is heavy forest. This watershed is very low."

The forest west of the Sierra Nevada, Carriker writes, "extends westward to the shores of the Cienaga Grande.... The region between Cienaga Grande and the Magdalena is swampy and contains many sluggish waterways and is inundated frequently...."

Unforested Tropical Areas.— That part of the Tropical Zone in Colombia not covered by heavy forest growth may be grouped under four heads: (1), the Llanos; (2), the Caribbean; (3), the upper Magdalena and (4) the upper Cauca or Cauca Valley proper. Aside from these major divisions there are semi-arid pockets like the upper Dagua on the western slope of the Western Andes, bare foothills such as exist above Dabeiba, or brush-grown valleys like that of the lower Rio Negro, but these and similar local variations do not affect the general truth of our classification.

The Llanos occupy that part of Colombia lying east of the Andes and north of the Rio Guaviare. Of them Rice (*l. c.*, p. 139) writes: "The Llanos, extending from the Cordillera to the Orinoco river, and from the Arauca to the Guaviare, are covered with dense, tall grasses, from which here and there rise groups of palms and bushes and belts of trees. They are well watered by innumerable streams, varying in volume and size from immense rivers to rivulets, which in winter season overflow the lower lands."

Of the Llanos of San Martin the same author writes: "To the east they are broken by swales, swamps, and eminences of mesa and scarp formation which push the Humadea river northeast and deflect the Ariari southeast. The high Llanos, at the foot of the forested hills are usually rocky, and semi-arid, covered with wild dense jungle growth, and so deeply ravined as to be impassable. These merge into the low Llanos, over which are scattered Savannas, immense meadows of fine succulent grasses, dotted with high bushes, clusters of palms, and thickets of other trees. During the wet or winter season, much of the land is subject to inundation, and consequent fertilization, by the swollen rivers."

Hettner,[1] writing of the country lying at the eastern and western bases of the Eastern Andes in the Bogotá region, describes the Llanos and accounts for their lack of forests as follows:

"The two lowlands which take in the western and eastern foot of the Cordilleras, bear altogether different plants; the lowland of the Magdalena River below Honda is covered with a thick, primeval forest; the eastern low-lands, the so-called Llanos, are on the other hand, wide grassy plains, which are only interrupted by a line of forests on the banks of rivers. This difference of plant growth has a relation with the rainfall, for the lowland of the middle part of the Magdalena River has two rainy and two dry seasons, which are, however, of short duration; in the Llanos, on the other hand, the one dry season shrinks together to a few weeks, while that of the other is extended to from five to six months. With so long a dry season near the equator, the forest growth is out of the question. If we should travel southward in the Llanos and reach the territory of the equatorial rains, we should find here likewise a luxuriant forest, and vice versa, at the lower part of the Magdalena River, somewhat north of 8 degrees, where the tropical rains begin, the forest is gradually crowded out by grassy plains, interspersed with single trees, or in other words, by savannas."

The Caribbean forestless region corresponds to the Caribbean faunal area. It is a semi-arid or arid region in which the absence of forest-growth is presumably due to insufficient or irregular rainfall with long periods of drought.

The coast region itself, from the Rio Sinú to the Goajira Peninsula, except for the mangrove-bordered lagoons, and the section of forest-covered shore north of the Sierra Nevada of Santa Marta, may be described as arid. Cacti, thorn-bearing bushes and other xerophilos forms comprise its characteristic vegetation. (Farther inland we pass to the semi-arid savannas, a grazing country with scattered mimosas and acacias and frequently marshes.

Carriker writes: "The semi-arid coast belt begins a few miles south of Cienaga (town on the Santa Marta Railway) and extends around the coast to somewhere about Cabo de San Juan de Guia, where the forest of the Sierra Nevada (as above quoted) extends right down to the sea all along the coast to a point known as Camarones, from which point to Rio Hacha is a region of scrub and cactus, along the coast, but opening out into savanna and scattered woodland toward the south, and continuing on around the Sierra Nevada to the region of the Valle de Upar and Rio Cesar Valley.... The whole of the Goajira Peninsula, from Rio Hacha east, is an arid region of cacti and thorny scrub."

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[1] 'Die Kordillere von Bogotá,' Petermann's Mittheilungen, Ergänzungsband, 22, p. 76. I am indebted to Dr. Chester A. Reeds for this and following abstracts from Hettner's valuable paper.

Hettner's reference to the savannas of the lower Magdalena, "somewhat north of 8 degrees or just north of the region of tropical rains" has been given in connection with his description of the Llanos quoted on a preceding page.

The two remaining unforested areas, the upper Magdalena and upper Cauca Valleys, are described both in our itineraries and in connection with the characterization of the Cauca-Magdalena fauna of which they form arid sections.

Hettner (*l. c.*, p. 79) referring to the upper Magdalena region writes:

"Another interruption of the forest was probably formed by the strata of sand and gravel, whose porous soil, destitute of nutriments, is not sufficient for the forest; the mesa of Fusugasugá, for instance, probably always consisted of thorny underbrush and grass. Similar, although still more adapted to the drought, because it lies in a warmer climate, are the strata of sand and gravel of Medina or the tuff plains on the Magdalena River above Honda."

The same author (*l. c.*, p. 80) describes the vegetation of this and similar semi-arid localities in this part of Colombia as follows:

"In many places, the bushy vegetation shows plainly its adaptation to drought, and this is generally the case in the vicinity of the lighter mimosa forest, which probably took in the place of this brush originally. It is small-leaved and thorny and generally shows the acacia form; the agaves with their sword-shaped, sharp-edged, fleshy leaves, and the most varied forms of cacti, whose juicy trunks give them the ability to overcome drought, are numerous and often form impenetrable thickets, while at different spots, they stand singly, and leave the bare earth between them. In such places the land almost bears the appearance of a desert, and only the donkey finds a meagre meal. This vegetation, adapted to the drought, occurs in almost all the altitudes, on the banks of the Magdalena River above Honda, as well as in the valley of the Rio Bogotá between Tocaima and Jiradot, or in the vicinity of Cúcuta, and at Neiva, or at Soacha in the southern part of the plateau of Bogotá, but it is, however, more extensive and more developed in the lower, warmer parts than in the cooler altitudes."

The Cauca semi-arid region, begins slightly south of the head of navigation in the Cauca river, in Antioquia and extends up that much constricted region lying between the Western and Central Andes, through which the Cauca flows, to the Cauca Valley. The topographic isolation of this valley is therefore faunally increased by the aridity of the region which lies between it and the humid lower Cauca-Magdalena region.

The Cauca Valley, as elsewhere remarked, is far from arid. Nevertheless, its forests are largely restricted to the banks of streams and low-lying areas where a natural subsurface irrigation gives them the water the insufficient rainfall does not directly provide.

It must, however, be remembered that the Cauca region has been settled for many years, and that deforestation to create grazing for cattle has long been practiced. It is probable, therefore, that the forested area was formerly more extensive than it is at present.

Mountain Forests.— Under the general head of Mountain Forests we may include the forests of the Subtropical and Temperate Zones. Both may be classed as cloud forests, the lower limit of the first being determined by the altitude of condensation, the upper limit of the second by that of the temperature at which tree-growth ends.

Depending for their continuity on topography, or the relation between slope exposure and prevailing air currents, on the relative altitude of contiguous ridges and other comparatively local conditions, a detailed survey would be required to make anything approaching an accurate map, showing the distribution of mountain forests in Colombia. It may, however, be said in a general way that Subtropical forests, or those lying between approximately 5000 and 9500 feet, because of their lower altitude, are more or less continuous on one slope or both, of all three ranges of the Colombian Andes.

Temperate Zone forest, both because of the higher altitude required, and also because of the lower rainfall which usually prevails on this zone, is less continuous than that of the Subtropical Zone.

Unforested Mountain Areas.— As indicated by the statements just made, the forestless tracts above the tropics are found largely in the Temperate Zone, where on the Bogotá Savanna, or in that region lying south of Popayan, for example, there are wide areas which are treeless.

What is believed to be an approximation to existing facts is expressed, semi-diagrammatically, in the accompanying map in which the yellow color employed represents not only the arid coast region, the savannas, and plains of the Tropical Zone, but also treeless, grass-covered slopes and paramos of the higher summits.

NOTES ON COLOMBIAN CLIMATOLOGY.

Temperature:— The temperature of any given locality in Colombia shows so little fluctuation throughout the year that the seasons are marked, not by increase of cold or heat, but by rainfall. To demonstrate the narrow and regular path travelled yearly by the thermometer in Colombia, and as a contribution to the unfortunately limited amount of published meteorological data from that country, I append a summarized record of the temperature for the year 1907 at the sugar estate of La Manuelita in the Cauca Valley near Palmira. These records were made by Mr. Chas. J. Eder and are selected as an average from a series covering a period of ten years. It will be observed that there is only a difference of six degrees in the average weekly temperature for the entire year.

Temperature for the year 1907 at La Manuelita, Col.

Week ending		Highest	Lowest	Average for week.
Jan.	4	85	66	74½
	11	86	63	74¾
	18	86	63	75
	25	84	65	73
Feb.	1	86	64	74
	8	86	67	73
	15	86	64	73
	22	85	64	73
March	1	86	62	72
	8	86	64	75½
	15	86	64	75
	22	88	66	76
	29	85	64	74½
April	5	86	64	75½
	12	87	66	75
	19	86	66	76
	26	86	67	76½
May	3	86	65	75
	10	85	67	75
	17	85	64	73½
	24	86	66	73
	31	83	63	74
June	7	85	62	74
	14	86	64	75½
	21	86	66	75
	28	84	65	73⅓

Week ending		Highest	Lowest	Average for week.
July	5	86	63	$74\frac{3}{7}$
	12	86	64	$74\frac{1}{2}$
	19	85	65	74
	26	89	59	$74\frac{1}{2}$
August	2	87	65	76
	9	91?	66	77
	16	90?	61	76
	23	90?	66	78
	30	80	64	$77\frac{1}{2}$
Sept.	6	89	65	76
	13	91	64	$76\frac{1}{2}$
	20	89	64	$76\frac{3}{4}$
	27	90	65	$76\frac{1}{2}$
Oct.	4	88	67	76
	11	86	64	$76\frac{1}{2}$
	18	89	65	77
	25	88	64	$75\frac{1}{2}$
Nov.	1	87	66	75
	8	87	66	76
	15	87	68	$77\frac{1}{2}$
	22	86	66	75
	29	86	66	76
Dec.	6	86	65	76
	13	85	65	75
	20	87	64	76
	27	90	66	$77\frac{1}{2}$

The preceding observations were made in the Tropical Zone, but an equal stability in the yearly range of temperature is shown at localities in the Subtropical as well as Temperate Zones. Thus, Regel states that the lowest monthly average recorded at Bogotá is 57° (July, 1880), while the highest, 61°, occurred in the same month of the succeeding year.

This surprisingly small annual range in the temperature of any one locality doubtless accounts for the comparatively small variation in the limits of life-zones, the boundaries of which are primarily isothermal.

It is, therefore, of importance for us to know to what extent temperature is affected by altitude and I insert here the following pertinent observations from Robert Blake White's 'Notes on the Central Provinces of Colombia' (Proc. R. G. S., V, 1883, pp. 263, 264).

"From a numerous series of observations of the mean temperatures at different altitudes in the cordilleras, collected from a great many observers, I have formed a table of mean temperatures corresponding to a series of altitudes from sea-level up to 16,400 feet in height, which will be found very generally applicable over the whole of the Colombian territory. These mean temperatures are derived from observations made on distinct systems, but as a rule the temperature of the earth, in a part sheltered from the sun and rain, at a depth of 30 inches from the surface of the ground, will represent in these latitudes the mean temperature of the locality. In tropical regions, where vegetation is not exposed to great variations of temperature, the most important point to which the agriculturist should look is the mean temperature, if he would judge correctly of the climate of any locality.

"Table of Mean Temperatures in the U. S. of Colombia, between 2° and 6° N. Lat., compiled from observations by Humboldt, Caldas, Boussingalt, Mosquera, Reiss, Stubel, and White.

Height above Sea-level. Feet.	Mean Temperature. Fahr.	Height above Sea-level. Feet.	Mean Temperature. Fahr.
0	82.4°	9,020	55.4°
820	80.4	9,840	53.6
1,640	78.4	10,660	50.9
2,460	76.3	11,480	48.2
3,280	74.3	12,300	45.5
4,100	71.2	13,120	42.8
4,920	68.0	13,940	40.1
5,740	65.3	14,760	37.4
6,560	62.6	15,580	32.0
7,380	59.9	16,400	30.2
8,200	57.2		

"The mean in the greater altitudes varies somewhat according to the greater or less extent of snow-covered mountains, and in the lesser altitudes the temperature is affected by the open or inclosed character of the valleys and by the presence or absence of vegetation. Generally, however, it will be found that the above means are sufficiently near the truth to be of practical utility."

Rainfall: — As before remarked, the seasons in Colombia are characterized by dry and wet periods rather than by variations in temperature. It is, therefore, to be regretted that data in regard to rainfall are even less satisfactory than those relating to temperature. Furthermore, variations in rainfall, both at the same locality and at neighboring stations, are so great that the statistics available merely demonstrate the need for additional observations before even the most conservative generalizations can be made on this branch of Colombian meteorology.

Two types of the seasonal distribution of rain are commonly recognized in Colombia. In one, a wet season of six months duration is followed by a dry season of equal length. In the other, wet seasons each of three months duration are separated by dry seasons of equal length.

Under the first-named condition, rain usually falls from May or June to November or December, and the season is termed "invierno" or winter; while the months from November or December to May or June are dry and the season is known as "verano" or summer.

North of latitude 8° the seasons are characterized by one dry and one rainy period; south of this latitude two rainy and two dry seasons are the rule. The comparatively arid Caribbean Fauna possesses therefore but one rainy season, while the humid Cauca-Magdalena Fauna has two, annually. There is, however, much irregularity both north and south of latitude 8°, while the amount of variation in annual precipitation at stations separated by only a few miles may exceed 300 inches!

For example, at San José, thirty-seven kilometers from Buenaventura, the observers of the Pacific Railway recorded a deposit in 1912 of 400.88 inches, while during the same year Caldas, distant 45 kilometers from San Jose, received only 54.46 inches, a difference of 346.42 inches. The topographic conditions responsible for this remarkable variation will be found described under the description of the route followed by our expedition No. 1.

Ocean currents, comparative temperatures of the air over land and sea, prevailing direction of the wind in relation to mountain slopes, relative height of ranges in the same chain of mountains are among the more important local causes affecting rainfall in Colombia. The subject is intimately related to the distribution of life and particularly to the breaking up of zones into faunal areas, but, as already remarked, few exact data exist and I therefore merely present those I have obtained through the courtesy of others, without further comment.

Record of Rainfall at Pato Mines on the Rio Neché, Antioquia, from August, 1913, to July, 1914.

1913.	
August	17.4
September	20.3
October	15.7
November	18.6
December	7.8
1914.	
January	8.7
February	1.8
March	6
April	8.8
May	18.8
June	14.4
July	10.7
	143.6

Record of Rainfall at certain Stations on the Pacific R. R.

Contributed by R. Alvarez Salas.

Stations.	1910.	1911.	1912.	1913.	1914.
Buenaventura	323,96	248,66	265,10	234,90	262,86
San José Km. 37	270,00	277,37	400,88	296,10	——
Caldas Km. 82	57,08	46,66	54,56	50,11	31,09
Palmar Km. 98	34,06	25,41	——	——	——
Lomitas Km. 109	——	33,34	——	——	——
Yumbo Km. 158	——	——	——	37,73	——

Annual Rainfall at La Manuelita, Cauca Valley, 1900–1910.

Year.	Amount.	Days on which Rain Fell.
1900	37.97	123
1901	45.21	136
1902	33.80	148
1903	56.38	131
1904	37.74	141
1905	33.79	113
1906	39.96	126
1907	47.80	144
1908	54.94	177
1909	55.13	172
1910	48.50	160

Average Monthly Rainfall at La Manuelita, Cauca Valley, 1900–1910.

Month.	Amount.
January	3.19
February	3.10
March	4.16
April	6.09
May	5.37
June	2.92
July	1.50
August	1.49
September	2.98
October	5.81
November	4.78
December	3.20
	44.59

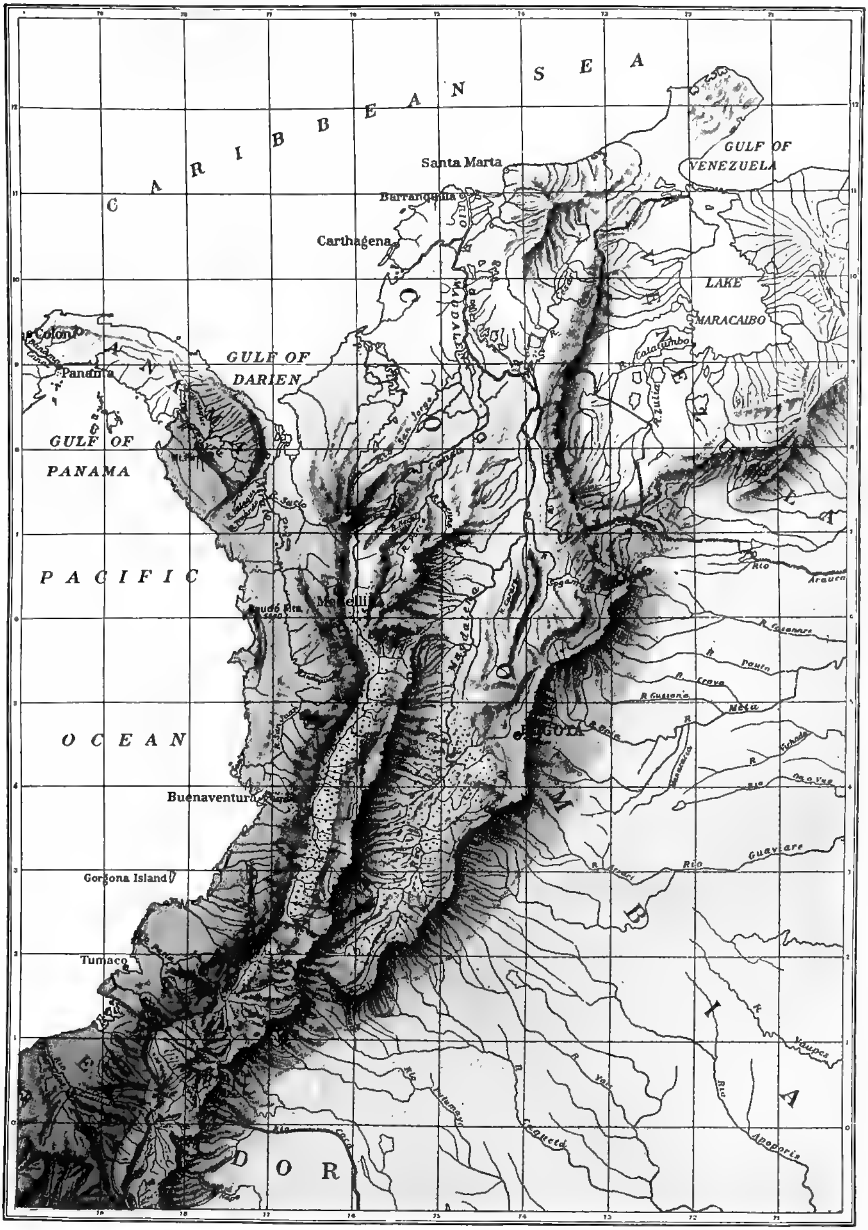
THE LIFE ZONES OF THE COLOMBIAN ANDES.

The ascent of a lofty mountain on which, faunally, several hundred feet of altitude may represent several hundred miles of latitude, is a profoundly impressive and fascinating experience for the zoögeographer. One is amazed by the distinctness of the life-zones encountered and is led to speculate on the origin of their strongly characterized floras and faunas. That the altitudinal distribution of plants should conform closely to belts or zones, the limits of which are determined primarily by temperature, is not surprising; but that such mobile creatures as birds should be confined within certain more or less definite boundaries by these invisible barriers is a convincing evidence of their potency as well as of the sensitiveness of the organisms on which they act.

It does not follow that every species will occur in only one zone, it apparently being a general law that wide latitudinal or faunal distribution implies also great altitudinal or zonal range. Examples may be found among birds as widely apart in relationships and habits as the Turkey Vulture and House Wren. Both range at sea-level from the South Temperate to the North Temperate Zone; both are found from the tropical lowlands to the temperate uplands of the Colombian Andes.

These birds, and a few others like them, are, however, marked exceptions and while a species may advance a small distance beyond its true zone, a surprisingly large number of species are found in only one zone. The zones themselves are not, of course, more sharply defined than the ranges of the species which characterize them.

No one can stand at the foot of a snow-crowned mountain in the tropics without at once realizing that temperature, as it is influenced by altitude, is obviously the dominant factor in producing the floras and faunas encountered between base and summit. Where humidity, and in certain instances, character of the soil, add their influence, the boundary lines between life zones are often very sharply defined. One may pass, for example, from the upper border of the arid tropics on the eastern slope of the Western Andes at San Antonio into the dense forests of the humid subtropics on their crest in less than two minutes, and experience a complete change in bird-life. But even where temperature alone is active, and there is no marked difference in rainfall, the forest being continuous, an altitudinal difference of 1000 feet may bring one into an essentially new avifauna. Such a phenomenon we observed when traveling from El Piñon (alt. 9600 ft.) to just above El Roble (alt. 8600 ft.), on the trail between


CARIBBEAN SEA
GULF OF VENEZUELA
Santa Marta
Barranquilla
Rio Magdalena
Carthagena
LAKE MARACAIBO
R. Catatumbo
R. Zulia
Colon
Panama
GULF OF DARIEN
GULF OF PANAMA
R. San Jorge
Cauca
R. Sucio
PACIFIC OCEAN
Medellin
Sogamoso
Rio Arauca
R. Casanare
R. Pauto
R. Cravo
R. Cusiana
Meta
BOGOTA
R. Upia
Vichada
Buenaventura
Rio Guaviare
R. Ariari
Gorgona Island
Tumaco
COLOMBIA
R. Vaupes
R. Yari
Caqueta
Putumayo
Rio Apoporis
Rio Coca
Napo
ECUADOR

		Faunas			Faunas
Tropical Zone	▨	Colombian-Pacific	Subtropical Zone	▨	West Andean
	☐	Cauca-Magdalena[1]		▨	East Andean
	☐	Caribbean	Temperate	▨	Zone and Fauna
	▨	Orinocan	Paramo	■	Zone and Fauna
	☐	Amazonian			

LIFE ZONES AND FAUNAS IN COLOMBIA

[1] The dotted area is the arid portion of this Fauna.

Bogotá and Fusugasugá. The first-named locality has a highly developed Temperate Zone life; while at the second, the fauna of the Subtropical Zone is equally well represented.

A study of the bird-life of the Colombian Andes, shows, therefore, that it is distributed in four zones, and since the lower zone lies wholly within the tropics it follows that the remaining zones are all altitudinal. While I have been tempted to use names for them which seemed especially descriptive locally, it has been deemed far more desirable to accept existing terms which are generally applicable. These zones with their altitudinal boundaries are as follows:

Tropical Zone	sea-level to 4500–6000 ft.
Subtropical Zone	4500–6000 ft. to 9000–9500 ft.
Temperate Zone	9000–9500 ft. to 11,000–13,000 ft.
Paramo Zone	11,000–13,000 ft. to snow-line (15000 ft.).

These divisions correspond to the 'Tierra Caliente,' 'Tierra Templada,' 'Tierra Fria,' and 'Paramo' of other authors, but the altitudes here given are higher than those based on temperature alone.

Basing the limits of his divisions upon an apparently purely arbitrary assignment of isotherms to zonal boundaries, Hettner[1] places the upper limits of the Tierra Caliente [= Tropical Zone] at 1000 metres; the Tierra Templada [= Subtropical Zone] between 1100 and 2000 metres; the Tierra Fria [= Temperate Zone] between 2100 and 3000 metres, and the Paramo between 3100 and 4000 metres. It will be observed that the limits of only the upper zone conform to those determined on the distribution of bird-life. It is reassuring, therefore, to find a much closer agreement between the zonal boundaries here given, based on the distribution of birds, and those based upon the distribution of vegetation presented by Wolf,[2] who, as a result of his studies of the flora of Ecuador, gives for both the Western and Eastern Andean slope four zones of life as follows:

Tropical	sea-level to 1600 metres.
Subtropical	1600 to 3000 metres.
Subandine [= Temperate]	3000 to 3400 metres.
Andine or Paramo	3400 to 4600 metres.

The limits of the two lower zones, for which Wolf employs names I had independently adopted, are essentially the same as those I here give for Colombia. The third, which Wolf calls the Subandine, but for which a continental-wide view of the subject suggests the name of Temperate Zone

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[1] Kordillere von Bogotá, p. 70.

[2] Geographia y Geologia de Ecuador, p. 435 et. seq.

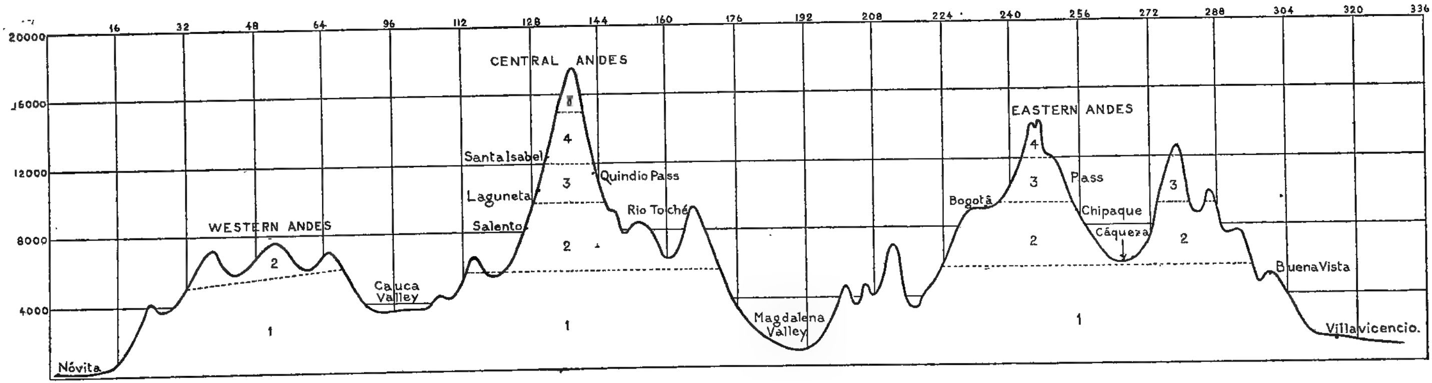

Fig. 1. Life-zones of the Colombian Andes.

A Semi-diagrammatic profile through the three ranges of the Colombian Andes from the Pacific coast to Orinocan drainage.

1. Tropical Zone. 2. Subtropical Zone. 3. Temperate Zone.
4. Paramo Zone. 5. Perpetual Snow.

Vertical Scale in feet. Horizontal Scale in miles.

as more appropriate, is somewhat less extensive altitudinally than in Colombia, and the fourth, or Paramo, is correspondingly larger. Local conditions, including the much greater superficial area of the Paramo Zone in Ecuador, and the isolation of the temperate interandine region from Subtropical influences, are no doubt responsible for these differences.

Wolf's zones, as well as the comparatively simple topography of the Andean system in Ecuador, are shown in the accompanying diagram from his standard work (*l. c.*, p. 441).

The extent, general, and ornithological characters of the zones herein proposed are presented in detail beyond, but here I offer several general considerations in regard to Andean zonal life as a whole.

Any attempt to explain existing conditions must be preceded by an effort to picture to ourselves the effect on the fauna of a tropical region of the uplift in it of a mountain system to snow-line. If at some point in the heart of the humid tropics, let us say upper Amazonia, progressive cooling should eventually produce a snow-covered area surrounded by successive, concentric, climatic belts leading gradually to the surrounding tropics, we should have no more striking climatic change than has been brought about by the elevation of the Andes.

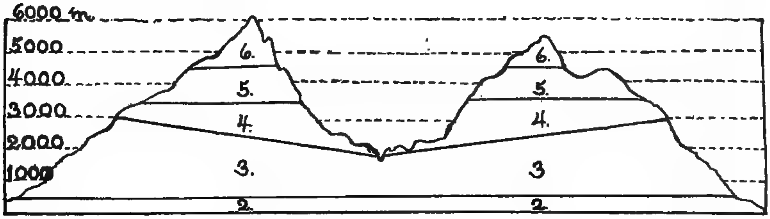

Fig. 2. **Ideal section through the Ecuadorian Andes to show zones of vegetation.**
2. Llanos. 3. Tropical and Subtropical Forests. 4. Interandean Region [= Temperale Zone]. 5. Andean Region [= Paramo Zone]. 6. Perpetual Snow. (From Wolf, 1892.)

Geologists, I believe, are agreed that this great mountain system is of Tertiary origin, and that there have been pronounced uplifts as late as the Pleistocene. Perhaps, therefore, we are warranted in assuming that the range had not acquired sufficient elevation to become an effective barrier to the distribution of tropical life prior to the latter half of the Tertiary.

However this may be, one's imagination is stimulated by an attempt to follow the course of events as a gradually increasing elevation, with its subsequent changes, brought into existence new habitable areas of the earth's surface with strikingly different climates from that of the base out of which they had arisen.

Where such an uplift created a mountain system as continuous as the Andes now are, these new areas were doubtless populated by latitudinal extension of range from regions having similar climates, and by altitudinal extension as the pressure of life from immediately contiguous regions below forced species upward, the more adaptable of which survived.

Although having the shorter journey, the change of environment would be greater for those species coming from another zone in the same latitude than for those coming from the same zone in a perhaps distant latitude. We should, therefore, expect to find greater variation in what may be called zonal representatives than in altitudinal representatives.

A study of the existing fauna supports these theories of the origin of zonal life and the degree of variation it presents. Thus the birds of the Subtropical Zone have been almost wholly derived from the zone below; those of the Temperate Zone came in part from the Subtropical, in part from the same zone at sea-level, while nearly all those of the Paramo Zone have come from the sea-level equivalent of this zone in southern South America.

It follows, then, that the birds of every zone above the tropics have been derived from a lower level. There are some exceptions to this rule but they do not affect the general truth of the statement. In comparative variability the fauna of the Subtropics differs more from the ancestral stock in the tropics than do the altitudinal forms of the Temperate and Paramo Zones from their distant sea-level derivatives of the South Temperate Zone, with which indeed they are often specifically identical. Hence it follows that uniformity of life increases with altitude, while as a corollary, the number of species decreases; uniformity of environment being apparently the underlying cause.

The sometimes marked difference in the character of alluvial bottomlands and slopes arising from them, even when both are wooded, exerts a strong influence on the range of some species of the Tropical Zone. Certain terrestrial birds, like *Pittasoma*, for example, are confined to the muddy shores of slow-flowing streams. Others, like *Opisthocomus*, do not leave the growth along the borders of such streams. Still others frequent the floor of the lowland forest.

Such restrictions of range, however, appear to me to be of habitat rather than of zone, and do not, in my opinion, require a subdivision of the Tropical Zone.

We obtained no evidence of altitudinal migration among Colombian birds, though it is probable that Hummingbirds range up and down mountain sides in search of certain flowers.

We cannot of course expect to find conclusive evidence of the geographic origin of all the species of a given zone. Possibly the ancestral forms and point of origin of only those it has acquired most recently may be determinable, while the derivation of the earlier arrivals may forever be unknown to us. Consequently we have a large group of species whose history is lost to us and which, therefore, we can only assume have entered their zone under the influences which are still active, and the cumulative effects of which they exhibit.

Aside from creating areas where, under the influence of a new environment, evolution has evidently proceeded at a highly accelerated pace, the topographic changes incident to the elevation of the Andes have profoundly affected the distribution of life in the Tropical Zone.

A comparison of the bird-life of the Pacific coast of Colombia and northern Ecuador with that of the Tropical Zone at the eastern base of the Andes in southeastern Colombia and eastern Ecuador, induces the belief that we have here, in part, a pre-Andean fauna, the Pacific portion of which has been cut off from that of upper Amazonia by the Andean uplift. The specific identity of many birds common to both areas is evidence that but little change has taken place in their surroundings since their ranges were disconnected, and in such cases evolution has, so to speak, been at a standstill. But the elevation of the intervening territory to snow-line has brought into play most of the environmental influences one finds between the equator and the poles, and where in an unchanged basal zone species remained as constant as their habitat, in the new region they sprang forward in an evolutionary race. The evidence on which this theory of the Amazonian origin of Pacific coast life is based is presented in detail beyond. The strongly marked characteristics of the Colombian Pacific Fauna, however, indicate that even in the Tropical Zone evolutionary influences have been active since the isolation of the Pacific coast region.

The bird-life of the Cauca Valley and upper Magdalena Valley appears to have been acquired under existing topographic conditions. The fact that the forests of the Pacific coast compare in luxuriance with those of upper Amazonia, while forests are of small extent in the Cauca Valley and are wanting in the upper Magdalena Valley, may in part explain the marked difference in the bird-life of these valleys and that of the Pacific coast.

Heavy forest, however, exists in the lower Cauca-Magdalena region, the bird-life of which has evidently been acquired in part from the Pacific coast, in part from east of the Andes, suggesting that this region was not above sea-level prior to the Andean uplift. These, however, are faunal rather than zonal problems, and they will be discussed more fully in the succeeding pages.

Our studies of the faunal effects of the appearance of the Andes must not be restricted to those changes wrought by the uplift of this system, but must also take into consideration the subsequent modifying factors of glaciation, subsidence and erosion.

In 'Die Kordillere von Bogotá' Dr. Alfred Hettner[1] gives the results of his studies of glaciation in the Eastern Andes showing that at their maximum development glaciers which are now retreating were, in at least one instance, 460 meters lower than at the time his observations were made. He writes (p. 74):

"During the last years and decades the boundaries of the snow and the glaciers have probably retreated to a large extent. All the people who served me as guides here agreed to the same opinion; and that the retreat must have been quite marked, may be gathered from the words of a peddling Indian tradesman, who expressed his lively ill-will for the visits of strangers in the mountains, for he thought they were to blame for the disappearance of snow. Upon the snow-covered mountain of San Paulin, the smooth nature of the strata on the western side for several hundred meters below the present snow line clearly shows that it was until recently covered with snow. We have previously heard that from the foot of the Sugar-loaf Glacier to a distance of 700 to 800 m. and a difference in height of 80 m., a great amount of end moraines are found, upon which no plant growth has yet been able to settle, which must, therefore, be of a very recent origin. About contemporaneous with the retreat of the snow-line of the Alps and that of many mountains, the snow-line of the Colombian Andes also retreated."

On the succeeding page (75) he adds:

"In more ancient times the glaciers must have been much larger, the climate consequently cooler, for I noticed on the slope of the valley, to a distance of at least four or five km. from the present foot of the glacier, about 460 m. lower, a row of plain end moraines grown over, and it is possible that they extend down further.

"Even if the observation that is taken in general delineations and in text-books does not possess any proof, the fact of the existence of an ice age in the Andes of Colombia, and supposedly also of Venezuela, may be considered as certain. Regarding the appearance of two ice ages, no intelligence has yet been gathered from the equatorial Andes up to the present time."

It seems evident, therefore, in view of the different climatic conditions which must have prevailed in the Andes during the period of maximum glaciation, that the existing zonal boundaries are post-glacial. Without a more detailed knowledge of the Andean Ice Age, and of the variation in altitude with latitude, of Andean life-zones, we can only speculate on the extent to which the zones were affected by the rise and fall of a glacial period.

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[1] Petermann's Mittheilungen Erganzungsband 22, pp. 74, 75. I have to thank Dr. Chester A. Reeds for these references and the accompanying translation.

We may with some hesitation suggest that so pronounced a boreal type as *Otocoris* is a recent bit of glacial drift stranded on the Savanna of Bogotá. But on the other hand, with far more confidence, we may believe that the undoubted northward extension of South Temperate Zone species along the Andes, with increasing altitude, to the mountain crests of Colombia, has been coincident with the retreat of the glaciers; and the often close relation of these birds with their sea-level, ancestral form supports this view. Whether or not this be true there can be no question of the southern origin of most of the species of the Paramo and Temperate Zones.

The trend of life in the Tropical Zone is less susceptible of determination. One cannot say that life does not radiate from an equatorial center and flow north, and south, to the limits of the Tropical Zone; though the northward current in America is now not only stronger but reaches farther.

In the Subtropical Zone with its extremities reaching into Mexico, the evidence also indicates a current setting toward the north. If, however, this northward bound current is of post-glacial origin, it apparently follows that the former subtropical bridge, which carried the numerous subtropical species now found in Costa Rica to that country from Colombia (as suggested beyond), has disappeared since the Glacial Period.

It is in this connection that we find our best illustration of the biogeographic effects of the two other modifying factors,— subsidence and erosion.

The retreat of the glaciers to higher altitudes with the resulting upward extension of life-zone boundaries, is accountable for the formation of Paramo Zone islands separated by Temperate Zone areas. Again Temperate Zone islands have apparently been formed by erosion of the mountain crests which at one time connected them. This appears to have happened in the Western Andes where the close relation now existing between the life of the Temperate Zone of the Andes west of Popayan and that of the Paramillo at the northern end of the range, suggests the former continuity of the Temperate Zone on the crest of that range.

Apparent proof of subsidence, doubtless accompanied by erosion, is found in what I have termed the 'Panama fault' in the Subtropical Zone which, after terminating at the northern end of the Western Andes, reappears again on the crest of the higher mountains of eastern Panama and of western Panama, though in the intervening areas it is widely separated by the Tropical Zone. The evidence on which this theory of the former continuity of the Subtropical Zone from Colombia to Costa Rica rests, is presented beyond.

The whole question of the origin of Andean life-zones is, from the ornithological point of view at least, a new one, and I cannot at this stage of our knowledge hope to do much more than open it for discussion.

The fundamental factors in zone formation, and the conclusions reached from our studies in Colombia, may be stated as follows:

Factors.

Past
- Rise of the Andes
- Glaciation
- Erosion
- Subsidence

Present
- Temperature
- Humidity } Environmental factors.
- Soil }

Conclusions.

1. Existing faunal conditions in the Tropical Zone are, in part pre-Andean, in part post-Andean. The humid Pacific coast, for example, contains many species which appear to have occupied this region prior to the Andean uplift. The life of the Cauca Valley, on the other hand, seems to be of post-Andean origin, its analysis supporting the geological evidence that this valley was occupied by a lake until post-tertiary time.

2. The Subtropical Zone nowhere reaches sea-level. Its life has been derived from the Tropical Zone. Because of its greater age and because altitudinal extension of range may imply greater environmental change than occurs in latitudinal extension, its life varies more widely from that of the ancestral area than does the life of the remaining two zones.

3. When a Colombian Subtropical Zone form differs from its Ecuadorian representative, there is usually one race in the East Andean Fauna and another in the West Andean Fauna. In some instances, however, the Colombian form is alike in all three branches of the Andes, though these three arms of its range are separated by the intervening tropical areas, indicating that the same characters have been developed in the individuals of each mountain chain by parallelism.

4. Receding glaciers, erosion, and subsidence have produced zonal islands and zonal 'faults.' The distributional evidence on which, for example, the Panama 'fault' is shown to have occurred indicates that the Andes of Colombia and the higher mountains of western Panama and Costa

Rica were, until comparatively recent geologic times, connected by a range having an altitude of not less than five thousand feet.

5. The Temperate Zone reaches sea-level in the South Temperate Zone. Its life is derived in part by zonal, in part by latitudinal extension and is more recent than that of the Subtropical Zone.

6. The Paramo Zone reaches sea-level in southern South America. Its life is derived by altitudinal extension and is more recent than that of the Temperate Zone.

7. The present trend of the distribution of life is northward. Few boreal species have entered Colombia in recent geologic times.

8. With rare exceptions (*e. g., Brachyspiza capensis peruviana*) no species extends its range from an upper to a lower zone.

9. Wide latitudinal range usually implies wide altitudinal range. ✓

10. Uniformity of life increases with altitude. ✓

THE TROPICAL ZONE AND ITS FAUNAS.

The Tropical Zone in Colombia occupies all that part of the country lying approximately below an altitude of 5000 feet. In some few places it does not extend much above 4500 feet; in others it reaches to about 6000 feet. Its limits are determined primarily by temperature, but they are further dependent upon humidity, as humidity itself affects temperature through radiation.

On the heavily forested Pacific slope of the Western Andes the lack of favorable radiating surfaces is conducive to a lower temperature than is found at a corresponding level on the barren eastern slopes of the same range. In consequence, the upper margin of the Tropical Zone is at least 1000 feet higher on the eastern than on the western side of these mountains.

Unfortunately no exact data on temperature are available in this connection, but the influence of radiation was observed in a marked manner in the succeeding or Subtropical Zone at the San Antonio Pass (alt. 6800 ft.) where the road from Buenaventura to Cali crosses the Western Andes.

With a regularity which has given it the name of the "San Antonio Wind," at two o'clock each day a strong, cold, westerly wind, usually with a driving mist, sweeps over the crest of the range.

This phenomenon is apparently attributable to decreasing barometric pressure following radiation from the comparatively open floor of the Cauca Valley, when, already urged by the prevailing westerly wind, air from the coast rushes into the area of lower pressure and is condensed as it reaches the higher parts of the range.

Where zonal boundaries are determined not only by altitude (= temperature) but also by humidity, they are more clearly defined than when attributable to temperature alone. As with faunas, suitability of haunt or habitat here plays an important part.

The upper limits of the Tropical Zone in the Cauca Valley, for example, are arid and meet the lower borders of the Subtropical Zone at the lower limit of condensation. In journeying from west to east one therefore passes from the dripping, cloud-wrapped forests of the western slopes and crest of the Western Andes to the arid, treeless eastern slope of the range. The forest-inhabiting birds of the Subtropical Zone stop as suddenly as the forest itself and they are succeeded by certain species of the arid Tropical Zone which find a suitable haunt on these treeless slopes, whence they have extended their range upward from the dry savannas of the Cauca Valley below.

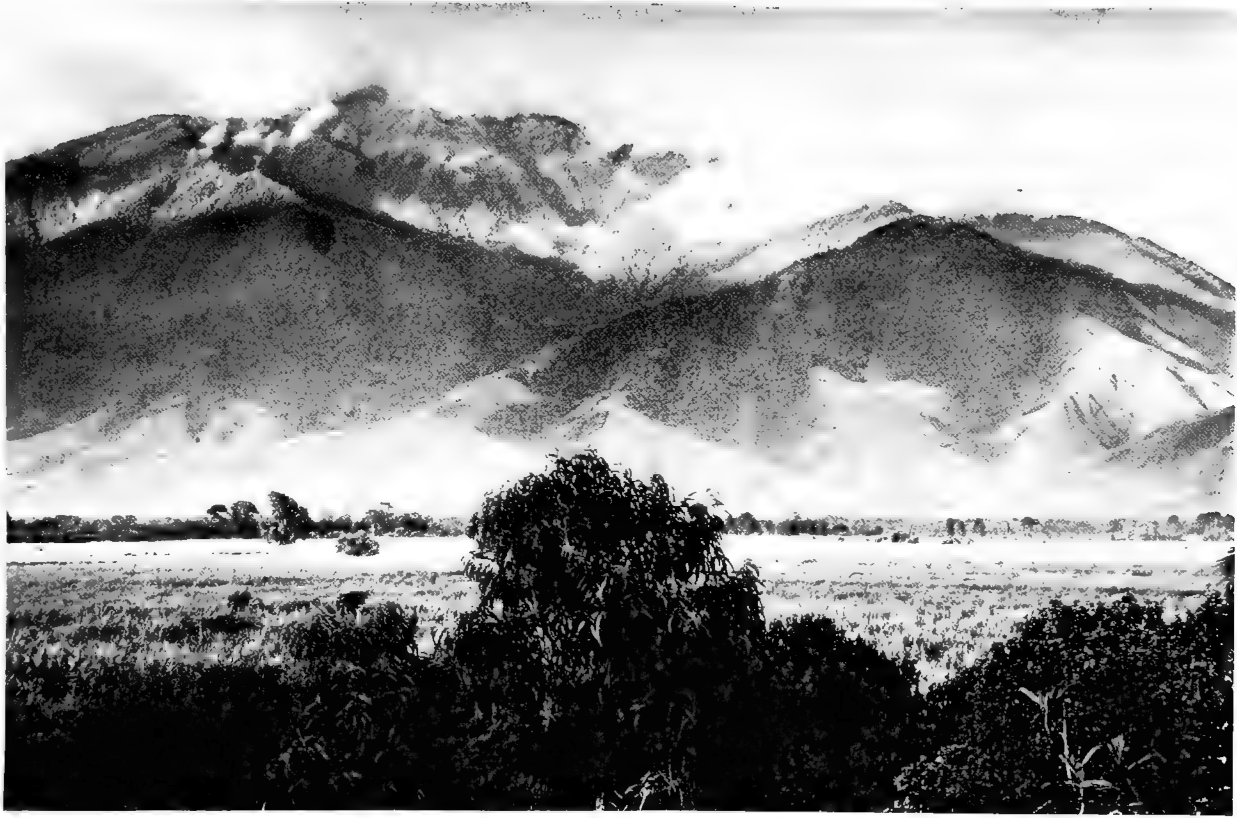
Descending to and crossing this valley, we ascend the bare foothills of the western slopes of the Central Andes only to reverse the experience, as at the cloud line (about 6500 ft.) one leaves the arid Tropical Zone and enters the forests of the Subtropical Zone.

On both sides of the valley, however, an extremely interesting interdigitation of zonal boundaries is observed as the arid Tropical Zone climbs up the barren ridges or crests of the spurs of the foothills, while the forests of the Subtropical Zone seem to flow down the drainage areas or arroyos between them. Under such conditions Tropical Zone species are found at higher altitudes than Subtropical Zone species on the same mountain slopes, and the importance of a personal knowledge of the local factors is obvious.

The altitude to which the Tropical Zone ascends is determined, therefore, primarily by temperature, but, as with faunal boundaries, humidity may exert an important influence not only as it increases the temperature but provides an environment better adapted to the wants of certain species of the arid Tropical Zone than to those of the Subtropical Zone.

Our experience at Buena Vista, in the Eastern Andes, made it apparent that the altitude of the upper margin of the Tropical Zone may also, to some extent, depend on the altitude of the range or ridge concerned. Here a heavily forested spur rises from the Llanos, with only gallery forests, to an altitude of 4500 feet. Its direct physical connections are therefore with the Tropical Zone, and in spite of the favorable environment and the altitude, very few Subtropical Zone species were secured.

Accessibility may therefore be a factor in fixing zonal boundaries. It is accessibility which chiefly distinguishes the Tropical Zone from zones above it. Life may enter it wherever it comes in contact with areas lying below an altitude of approximately 5000 feet; and a glance at an orographic



WESTERN SLOPE OF CENTRAL ANDES FROM LA MANUELITA

The descent of Subtropical Zone forest down the drainage ravines and ascent of arid Tropical Zone areas up the treeless ridges is clearly shown. See also Plate IV for a detail of similar conditions in the Western Andes. The arid Tropical Zone here ascends to an altitude of 3,000 feet above the valley. Miraflores, a station of Expedition No. 1, is at the forest line near the extreme right of the picture.

map will at once show how much more of the earth's surface lies below than above this level. Within its latitudinal limits the Tropical Zone may therefore be spoken of as a sea of life in which the upper zones are mere islands.

The comparison fails, however, when one examines the conditions under which life exists in the Tropical Zone, for instead of finding that uniformity of aspect which characterizes the sea, we find a diversity of environment far beyond that shown by any of the upper life zones. Shore-line, marsh, savanna, llano, plain, and forest afford homes for a correspondingly wide variety of forms, and, in connection with the extent of the area, go far to account for the richness of its life.

Returning again to our simile of the sea, when as in Colombia, the upper zone islands assume the rank of peninsulas or are numerous enough to be likened to archipelagos, more or less land-locked bays are formed which, chiefly through their isolation, become centers for the development of new types.

All these characteristics of the Tropical Zone, as compared with those of the zones above, are present in Colombia, and an attempt to define its faunal areas results in the recognition of no less than five more or less clearly defined Faunas, as follows:

1. The Colombian-Pacific.
2. The Cauca-Magdalena, including both humid and arid sections.
3. The Caribbean.
4. The Orinocan.
5. The Amazonian.

Of these the first, or Colombian-Pacific, is the most important since in connection with a high degree of humidity, not equalled elsewhere on the tropical Pacific coast, or indeed in the western hemisphere, it combines an isolation which has made it the principal local area of adaptive radiation in Colombia.[1]

To a limited extent the Cauca-Magdalena region, both in its humid lower Cauca and upper Cauca portions, has produced some new forms, and the Caribbean Fauna, with its extension on the Venezuela coast, appears to have been the birth-place of some of the species which are confined to it.

'Orinocan' and 'Amazonian' are terms provisionally applied to the respectively semi-arid and intensely humid portions of the Orinocan and Amazonian basins, which find their western borders at the base of the Eastern Andes. They are merely small parts of much larger faunas and possess no distinctive features of their own. With these general remarks on the

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[1] *Cf.* Osborn, The Age of Mammals, 1910, p. 22.

Tropical Zone in Colombia as a whole, we may attempt to describe and define its faunas.

The range of temperature throughout the zone is so small that this factor has not to be considered in determining faunal boundaries. Humidity, character of the soil, and ease of access are the agents which have been active in faunal development in Colombia. Of these the first is by far the most important. The arid upper Dagua basin, on the western slope of the Western Andes, is surrounded by the humid forests of the Colombian-Pacific Fauna and Subtropical Zone. Nevertheless, its life was derived through the Cauca Valley from east of the Andes, suitability of environment as it is controlled by rainfall, here proving far more potent than ease of access from immediately contiguous regions, which do not possess species adapted to an arid habitat.

Birds of the Tropical Zone.

Family *Tinamidæ.*

Tinamus major ruficeps
" " castaneiceps
" " latifrons
Crypturus cinereus
" berlepschi
" soui soui
" " caquetæ
" " caucæ
" " modestus
" adspersus yapura
" variegatus salvini
" kerriæ

Family *Cracidæ.*

Crax alector
" panamensis
" alberti
Penelope ortoni
" jacqûaçu
Ortalis columbiana columbiana[1]
" " caucæ[1]
" guttata
" garrula
Pipile cumanensis

Family *Odontophoridæ.*

Colinus cristatus decoratus
" " leucotis[1]
Colinus cristatus parvicristatus[1]
Odontophorus guianensis marmoratus
" parambæ
Rhynchortyx cinctus australis

Family *Columbidæ*

Columba speciosa
" rufina
" goodsoni
" subvinacea berlepschi
" plumbea propinqua
Zenaida auriculata
" ruficauda robinsoni
Chæmepelia passerina albivitta
" " parvula
" " nana
" minuta elæodes
" rufipennis rufipennis
" " caucæ
Claravis pretiosa livida
Leptotila verreauxi verreauxi
" rufaxilla dubusi
" " pallidipectus
" plumbeiceps
" pallida
" cassini
Osculatia purpurata
Oreopeleia veraguensis
" montana[1]

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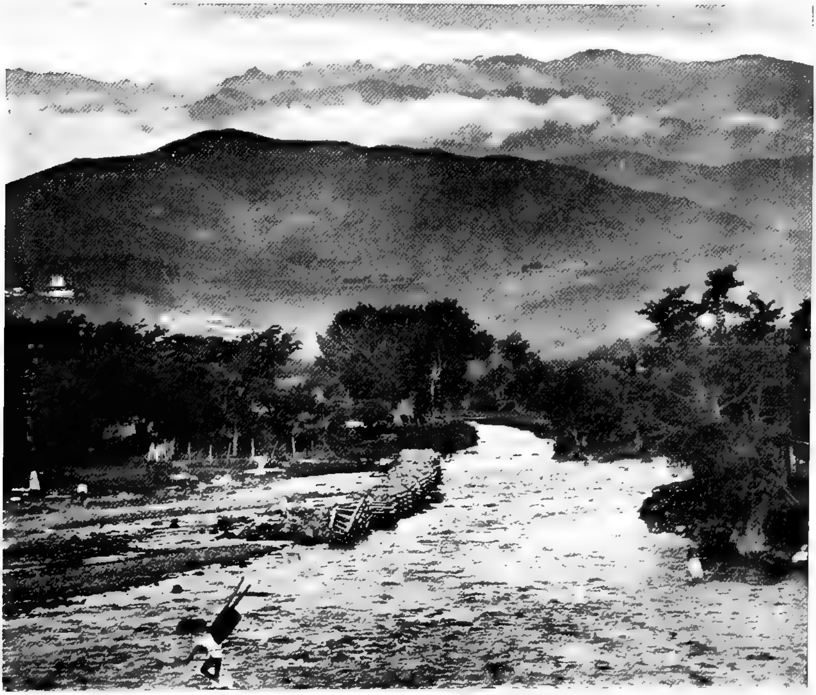
[1] Ranging upward to the Subtropical Zone.

Farallones of Cali, Western Andes

View across the Cauca Valley from La Manuelita, near Palmira, distant about twenty miles.



Farallones of Cali, Western Andes

View up the Cali River, from the town of Cali. The summit of this part of the Western Andes is unexplored. It may reach the Temperate Zone.

Family *Opisthocomidæ*

Opisthocomus hoazin

Family *Rallidæ*

Pardirallus nigricans nigricans
Aramides cajanea cajanea
" wolfi (*vide* Hellmayr)
Amaurolimnas concolor guatemalensis
Anurolimnas castaneiceps
" hauxwelli
Porzana flaviventris
Creciscus ænops
" albigularis
Neocrex columbianus
Gallinula chloropus pauxilla
Ionornis martinicus

Family *Heliornithidæ*

Heliornis fulica

Family *Podicipedidæ*

Podilymbus podiceps [2]
Colymbus dominicus brachyrhynchus

Family *Laridæ*

Phaëtusa chloropoda
Rhynchops nigra cinerascens

Family *Charadriidæ*

Belonopterus cayennensis [1]
Ægialitis collaris
Himantopus mexicanus
Gallinago brasiliensis

Family *Parridæ*

Jacana spinosa
" melanopygia
" nigra

Family *Œdicnemidæ*

Burhinus bistriatus

Family *Eurypygidæ*

Eurypyga major

Family *Psophiidæ*

Psophia napensis

Family *Ibididæ*

Theristicus caudatus
Harpiprion cayennensis
Phimosus berlepschi

Family *Plataleidæ*

Ajaia ajaja

Family *Ciconiidæ*

Jabiru mycteria

Family *Ardeidæ*

Ardea cocoi
Herodias egretta
Egretta candidissima
Florida cærulea
Hydranassa tricolor tricolor
Agamia agami
Nycticorax nycticorax nævius [2]
Cochlearius cochlearius [2]
Pilherodias pileatus
Butorides striata
Tigrisoma lineatum
" salmoni
Ixobrychus erythromelas

Family *Palamedeidæ*

Palamedea cornuta
Chauna chavaria

Family *Anatidæ*

Cairina moschata
Dendrocygna discolor
" bicolor [2]
Querquedula cyanoptera
Marila nationi
Nomonyx dominicus

Family *Phalacrocoracidæ*

Phalacrocorax vigua vigua

Family *Anhingidæ*

Anhinga anhinga

Family *Cathartidæ*

Gypagus papa
Catharista urubu [2]
Cathartes aura aura [2]

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[1] Ranging upward to the Subtropical Zone.
[2] Ranging upward to the Temperate Zone.

Family *Falconidæ*

Polyborus cheriway [1]
Ibycter americanus
Milvago chimachima [1]
Circus cinereus [1]
" buffoni [1]
Micrastur guerilla interstes [1]
Parabuteo unicinctus harrisi [1]
Accipiter superciliosus
" ventralis
" bicolor
Tachytriorchis albicaudatus exiguus
Asturina nitida
Rupornis magnirostris magnirostris [1]
" " ruficauda [1]
Busarellus nigricollis
Urubitinga urubitinga
" schistacea
" plumbea
Leucopternis semiplumbea
" plumbea (*vide* Hellmayr)
Lophotriorchis isidorii [2]
Spizaëtus ornatus
" tyrannus
Herpetotheres cachinnans cachinnans
" " fulvescens
Rostrhamphus sociabilis
Leptodon uncinatus
" palliatus
Harpagus bidentatus
Ictinia plumbea [1]
Falco fusco-cærulescens [1]
" rufigularis [1]
Cerchneis sparveria caucæ [2]
" " intermedia [2]

Family *Bubonidæ*

Otus choliba
" watsoni
Lophostrix cristatus stricklandi
Ciccaba virgata virgata
" nigrolineata
Glaucidium brasilianum brasilianum
" brasilianum phalænoides
Tyto perlata subsp.

Family *Psittacidæ*

Ara ararauna
" macao
" chloroptera
" militaris militaris
" severa
Aratinga wagleri [1]
" æruginosa æruginosa
Pyrrhura melanura pacifica
Psittacula conspicillata conspicillata
" " caucæ
" spengeli
" sclateri
Brotogeris jugularis
" devillei
Amazona inornata
" amazonica
" ochrocephala ochrocephala
" " panamensis
" salvini
Pionus menstruus
Eucinetus pulchra
Pyrilia pyrilia [1]

Family *Alcedinidæ*

Megaceryle torquata torquata [1]
Chloroceryle amazona
" americana americana
" inda

Family *Momotidæ*

Urospatha martii martii
" " semirufa
Electron platyrhynchus platyrhynchus
" " minor
" " pyrrholæmus
Momotus subrufescens subrufescens
" " reconditus
" momota ignobilis
Hylomanes momotula obscurus

Family *Caprimulgidæ*

Nyctibius longicaudatus
Chordeiles acutipennis acutipennis
" " texensis

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[1] Ranging upward to the Subtropical Zone.
[2] Ranging upward to the Temperate Zone.

Uropsalis lyra
Hydropsalis climacocerca
Nyctidromus albicollis albicollis[1]
Stenopsis cayennensis cayennensis
“ “ monticola
Antrostomus rosenbergi

Family *Cypselidæ*

Streptoprocne zonaris albicincta[1]
Chætura spinicauda fumosa
“ cinereiventris sclateri
“ “ occidentalis
Cypseloides brunneitorques brunneitorques[1]

Family *Trochilidæ.*

Androdon æquatorialis
Threnetes cervinicauda
“ ruckeri fraseri
Glaucis hirsuta affinis
“ ænea
Phœthornis yaruqui sancti-johannis
“ fraterculus moorei
“ hispidus oseryi
“ anthophilus
“ griseogularis
“ striigularis striigularis
“ “ subrufescens
Eutoxeres condamini
“ aquila aquila
“ “ salvini
“ “ heterura
Campylopterus æquatorialis
Florisuga mellivora mellivora
Agyrtria viridissima subsp.
“ fluviatilis
Polyerata amabilis
“ rosenbergi
Lepidopyga goudoti
“ cœlina
Saucerottea saucerottei
“ viridigaster
Amizilis tzacatl tzacatl
“ “ jucunda
Hylocharis grayi[1]
“ humboldti
Damophila juliæ juliæ
Chlorostilbon gibsoni
“ hæberlini
“ melanorhynchus[1]
“ poortmani poortmani
Thalurania fannyi fannyi
“ nigrofasciata
Chalybura buffoni buffoni[1]
“ cæruleogaster
“ urochrysa
Colibri delphinæ
Anthracothorax nigricollis nigricollis
Chrysolampis elatus
Boissoneaua jardini
Heliothrix barroti
Anthoscenus superba stewarti
Calliphlox mitchelli
Popelairia conversi

Family *Trogonidæ*

Pharomacrus pavoninus
Trogonurus strigilatus strigilatus
“ strigilatus chionurus
“ curucui cupreicauda
“ bolivianus
Chrysotrogon caligatus columbianus
“ ramonianus
Curucujus melanurus melanurus
“ “ macrourus
“ massena australis

Family *Cuculidæ*

Coccyzus melacoryphus
Piaya cayana columbiana[1]
“ “ mesura[1]
“ “ nigricrissa[1]
“ rutila rutila
“ “ gracilis
Neomorphus salvini
Tapera nævia[1]
Crotophaga ani[2]
“ major

Family *Capitonidæ*

Capito aurovirens
“ maculicoronatus rubrilateralis

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[1] **Ranging upward to the Subtropical Zone.**
[2] **Ranging upward to the Temperate Zone.**

Capito maculicoronatus pirrensis
“ squamatus
“ hypoleucus
“ quinticolor
“ auratus auratus

Family *Ramphastidæ*

Ramphastos piscivorus brevicarinatus
“ swainsoni [1]
“ ambiguus abbreviatus
“ cuvieri
“ culminatus
“ citreolæmus
Pteroglossus pluricinctus
“ castanotis castanotis
“ torquatus nuchalis
“ sanguineus
“ flavirostris flavirostris
“ humboldti
Selinidera reinwardti
“ spectabilis

Family *Galbulidæ*

Galbula ruficauda ruficauda
“ “ pallens
“ melanogenia
“ tombacea tombacea
“ albirostris chalcocephala
Brachygalba salmoni (*vide* Scl. & Salv.)
“ fulviventris fulviventris
“ “ caquetæ
Galbalcyrhynchus leucotis

Family *Bucconidæ*

Bucco capensis
Notharcus pectoralis
“ hyperrhynchus leucocrissus
“ tectus subtectus
Argicus macrodactylus
Nystactes noanamæ
Nystalus radiatus
Hypnelus ruficollis ruficollis
Malacoptila fusca
“ mystacalis
“ panamensis poliopis
“ “ panamensis
Micromonacha lanceolata
Nonnula frontalis
Monasa flavirostris
“ morphœus peruana
“ pallescens pallescens
“ “ sclateri
“ nigrifrons

Family *Picidæ*

Chloronerpes xanthochlorus
“ litæ
Chrysoptilus punctigula punctipectus
“ “ guttatus
“ “ striatigularis
“ “ ujhelyii
Melanerpes cruentatus
“ pucherani pucherani
“ rubricapillus rubricapillus
Veniliornis fidelis
“ ruficeps hæmatostigma
“ kirki cecilii
Celeus loricatus loricatus
“ “ mentalis
Campephilus rubricollis
“ melanoleucus
“ malherbi
Cniparchus hæmatogaster splendens
Ceophlœus lineatus mesorhynchus
Picumnus cinnamomeus
“ squamulatus squamulatus
“ olivaceus olivaceus [1]
“ “ harterti
“ granadensis granadensis
“ “ antioquensis

Family *Conopophagidæ*

Conopophaga aurita
“ castaneiceps castaneiceps [1]
“ “ chocoensis

Family *Formicariidæ*

Cymbilaimus lineatus lineatus
“ “ fasciatus
Taraba unduliger
“ transandeana transandeana
“ “ granadensis
Thamnophilus nigriceps
“ punctatus punctatus

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[1] **Ranging upward to the Subtropical Zone.**

Thamnophilus punctatus atrinucha
“ canadensis pulchellus
“ doliatus doliatus
“ radiatus albicans
“ tenuipunctatus
“ multistriatus [1]
Thamnistes æquatorialis
“ anabatinus intermedius
Clytoctantes alixi
Dysithamnus puncticeps puncticeps
“ “ flemmingi
“ leucostictus
“ capitalis capitalis
“ ardesiacus ardesiacus
Thamnomanes glaucus
Myrmotherula pygmæa
“ surinamensis pacifica
Myrmopagis fulviventris
“ hæmatonota
“ ornata ornata
“ axillaris melæna
“ “ albigula
“ schisticolor schisticolor [1]
“ “ interior
“ cinereiventris pallida
Herpsilochmus rufomarginatus frater
Microrhopias grisea intermedia
“ boucardi consobrina
Ramphocænus melanurus trinitatis
“ rufiventris griseodorsalis
Microbates cinereiventris cinereiventris
“ “ magdalenæ
“ collaris
Cercomacra sclateri
“ tyrannina tyrannina [1]
“ nigricans
“ berlepschi
Anoplops bicolor æquatorialis
“ “ daguæ
“ “ bicolor
Myrmeciza melanoceps
“ maculifer maculifer
“ “ cassini
“ læmosticta nigricauda
“ longipes boucardi
“ “ panamensis
Myrmelastes immaculatus immaculatus [1]
Myrmelastes immaculatus berlepschi [1]
Gymnocichla nudiceps sanctæ-martæ
Dichrozona cinctus
Hypocnemis cantator peruviana
“ hypoxantha
Hylophylax lepidonota
“ nævia theresæ
“ “ nævioides
Myrmoborus leucophrys leucophrys
“ myiotherinus elegans
Phænostictus macleannani macleannani
Rhopoterpe torquata torquata
Formicarius colma nigrifrons
“ analis connectens
“ nigricapillus destructus
“ analis saturatus
Chamæza brevicauda columbiana
“ “ nobilis?
Pittasoma harterti
“ rosenbergi
“ michleri (*vide* Cassin)
Grallaria brevicauda minor
“ modesta
“ guatimalensis chocoensis
Hylopezus dives barbacoæ
“ “ fulviventris
“ perspicillata periopthalmica
“ “ perspicillata

Family *Dendrocolaptidæ*

Furnarius agnatus
Synallaxis mœsta mœsta
“ “ obscura
“ albescens albigularis
“ pudica pudica
“ “ nigrifumosa
“ “ caucæ
“ gujanensis columbianus
“ cinnamomea fuscifrons
“ candæi candæi
“ rutilans caquetensis
Xenerpestes minlosi (*vide* Berlepsch)
Hyloctistes subulatus subulatus
“ “ assimilis
Automolus melanorhynchus
“ ochrolæmus turdinus
“ dorsalis

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[1] **Ranging upward to the Subtropical Zone.**

Automolus pallidigularis pallidigularis
“ infuscatus infuscatus
“ nigricauda saturatus
“ cinnamomeigula
Philydor rufipileatus consobrinus
“ pyrrhodes
“ ruficaudatus
Ancistrops strigilatus
Xenops genibarbis littoralis
Sclerurus brunneus
“ albigularis albigularis
“ mexicanus obscurior
Glyphorhynchus cuneatus subsp.
“ “ castelnaudi
“ “ pectoralis
Dendrocincla lafresnayei lafresnayei
“ “ phæochroa
Xiphorhynchus guttata guttatoides
“ æquatorialis æquatorialis
“ lachrymosus lachrymosus
“ lachrymosus alarum
“ nanus nanus
“ insignis
Dendroplex picus picus
“ “ picirostris
Picolaptes albolineatus
Campylorhamphus trochilirostris procurvoides
“ trochilirostris venezuelensis
“ thoracicus
“ pusillus [1]
Dendrocolaptes validus validus [1]
“ sancti-thomæ sancti-thomæ
“ sancti-thomæ radiolatus

Family *Tyrannidæ*

Ochthornis littoralis
Fluvicola pica
Arundinicola leucocephala
Copurus colonus fuscicapillus
“ leuconotus
Machetornis rixosus flavigularis
Platytriccus albogularis [1]
Placostomus coronatus
Craspedoprion æquinoctialis
“ pacificus
Rhynchocyclus sulphurescens asemus
“ “ assimilis
“ “ exortivus
“ marginatus marginatus
“ viridiceps
“ flaviventris aurulentus
“ klagesi
Todirostrum cinereum cinereum [1]
“ sclateri
“ nigriceps
“ latirostre
“ schistaceiceps superciliare
Euscarthmus striaticollis zosterops
“ septentrionalis
Lophotriccus spicifer
“ squamæcrista minor
Orchilus atricapillus
Atalotriccus pilaris pilaris
Hapalocercus meloryphus
Serpophaga cinerea cana [1]
Inezia caudata intermedia
Mionectes olivaceus hederaceus
“ olivaceus pallidus
Pipramorpha oleaginea oleaginea
“ “ parca
Leptopogon superciliaris poliocephalus
“ amaurocephalus
Capsiempis flaveola leucophrys
Phæomyias murina incompta
Camptostoma pusillum pusillum
“ “ napæum
“ caucæ
Microtriccus brunneicapillus brunneicapillus
Tyrannulus elatus reguloides
Tyranniscus chrysops chrysops [1]
Elænia flavogaster flavogaster [1]
“ gigas
“ parvirostris
Myiopagis viridicata accola
“ “ pallens
Legatus albicollis
Sublegatus glaber
Myiozetetes cayennensis cayennensis
“ similis columbianus

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[1] Ranging upward to the Subtropical Zone.

Myiozetetes granadensis
“ similis connivens
Pitangus sulphuratus rufipennis
“ “ caucensis
“ sulphuratus subsp.
“ lictor
Sirystes albocinereus
Myiodynastes maculatus nobilis
Megarhynchus pitangua
Myiodynastes luteiventris
Onychorhynchus coronatus castelnaudi
Cnipodectes subbrunneus (*vide* Hellmayr)
“ minor
Myiobius barbatus barbatus
“ “ atricaudus
“ villosus
“ sulphureipygius aureatus
“ fasciatus fasciatus
Terenotriccus erythrurus fulvigularis
Myiotriccus ornatus stellatus
“ phœnicurus
Pyrocephalus rubinus rubinus
“ “ heterurus
Empidochanes cabanisi
Mitrephanes berlepschi eminulus
Sayornis nigricans cineracea
Myiochanes brachytarsus
Myiarchus tyrannulus tyrannulus
“ fortirostris
“ (ferox) panamensis
“ (ferox) venezuelensis
“ apicalis
“ tuberculifer tuberculifer
“ “ nigriceps
Tyrannus niveigularis
“ melancholicus satrapa [1]
Muscivora tyrannus

Family *Pipridæ*

Pipra erythrocephala erythrocephala
“ “ berlepschi
“ mentalis minor
“ velutina
“ coronata
Cirrhopipra filicauda
Machæropterus striolatus
Allocopterus deliciosus
Chloropipo holochlora holochlora
“ “ litæ
Chiroxiphia pareola napensis
Corapipo leucorrhoa
“ altera altera
Manacus manacus abditivus
“ “ interior
“ “ bangsi
“ “ flaveolus
“ vittellinus vitellinus
“ “ milleri
Scotothorus turdinus rosenbergi
“ “ stenorhynchus
Sapoyoa ænigma

Family *Cotingidæ*

Tityra cayana
“ semifasciata semifasciata
“ “ columbiana
“ “ esmeraldæ
“ buckleyi
“ a. albitorques (*vide* Hellmayr).
Platypsaris homochrous homochrous
“ minor
Pachyrhamphus cinnamomeus
“ magdalenæ
“ castaneus saturatus
“ polychropterus niger
“ atricapillus
Lathria cinerea
“ unirufa castaneotincta
Lipaugus simplex
“ holerythrus holerythrus
“ “ rosenbergi
Attila citreopygus citreopygus
Euchlornis jucunda
Cotinga nattereri
Carpodectes hopkei
Querula purpurata
Cephalopterus ornatus

Family *Hirundinidæ*

Iridoprocne albiventris
Progne chalybea chalybea
Phæoprogne tapera immaculata
Atticora fasciata

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[1] Ranging upward to the Temperate Zone.

Neochelidon tibialis
Stelgidopteryx ruficollis ruficollis
“ “ æqualis[1]
“ “ uropygialis[1]

Family *Sylviidæ*

Polioptila livida plumbeiceps
“ “ daguæ
“ schistaceigula

Family *Troglodytidæ*

Heleodytes minor bicolor
“ zonatus brevirostris
“ nuchalis nuchalis
“ turdinus hypostictus
“ albobrunneus harterti
Thryophilus leucotis
“ galbraithi galbraithi
“ albipectus bogotensis
“ rufalbus cumanensis
“ leucopogon
“ nigricapillus schotti
Pheugopedius fasciato-ventris fasciato-ventris
“ hypospodius
Troglodytes musculus striatulus
“ “ neglectus
Henicorhina inornata
“ leucosticta
“ prostheleuca albilateralis
Leucolepis salvini
“ phæocephalus phæocephalus
Microcerculus marginatus marginatus
“ “ occidentalis
“ squamulatus antioquensis

Family *Mimidæ*

Mimus gilvus tolimensis[1]
“ “ columbianus
Donacobius atricapillus albovittata
Rhodinocichla rosea rosea

Family *Turdidæ*

Planesticus phæopygus
“ gymnopthalmus
“ tristis daguæ
“ ignobilis ignobilis
Planesticus ignobilis goodfellowi[1]
“ “ debilis[1]
“ obsoletus columbianus
“ albiventer ephippialis

Family *Vireonidæ*

Vireosylva flavoviridis flavoviridis
“ chivi caucæ
Pachysylvia semibrunnea[1]
“ flavipes flavipes
“ minor
Cyclarhis flavipectus canticus
“ “ parvus

Family *Mniotiltidæ*

Compsothlypis pitiayumi elegans[1]
“ “ pacifica
Dendroica petechia æquatorialis
Geothlypis semiflava
“ æquinoctialis
Basileuterus bivittatus chlorophrys
“ auricapillus olivascens
“ rufifrons mesochrysus
“ fulvicauda semicervinus
“ “ fulvicauda

Family *Fringillidæ*

Cyanocompsa concreta cyanescens
“ cyanea caucæ
Oryzoborus angolensis
“ crassirostris crassirostris
“ funereus
Sporophila grisea grisea[1]
“ minuta minuta[1]
“ castaneiventris
“ aurita aurita
“ “ opthalmica
“ “ murallæ
“ gutturalis[1]
Tiaris olivacea pusilla[1]
“ bicolor omissa
Volatinia jacarini splendens
Pitylus grossus
Saltator maximus
“ olivascens
“ cærulescens azaræ
“ striatipectus striatipectus[1]

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[1] Ranging upward to the Subtropical Zone.

Astragalinus columbianus [1]
Sicalis flaveola
“ arvensis minor
Ammodramus savannarum caucæ
Myiospiza manimbe columbiana
“ cherriei
“ aurifrons
Arremenops conirostris conirostris
“ “ inexpectata
“ “ chrysoma
Emberizoides sphenurus
Paroaria gularis
Arremon aurantiirostris erythrorhynchus
“ “ occidentalis [1]
“ axillaris

Family *Cœrebidæ*

Cœreba luteola luteola
“ mexicana columbiana [1]
“ mexicana caucæ
Dacnis cayana cayana
“ “ cœrebicolor
“ angelica
“ egregia egregia
“ venusta fuliginata
“ leucogenys
Cyanerpes cyaneus pacificus
“ cærulea microrhyncha
Chlorophanes spiza exsul
“ “ cærulescens [1]

Family *Procniatidæ*

Tersina viridis occidentalis [1]

Family *Tanagridæ*

Tanagra cyanocephala cyanocephala [1]
“ aurea pileata
“ xanthogastra chocoensis [1]
“ “ brevirostris [1]
“ concinna
“ saturata
“ olivacea humilis
“ fulvicrissa purpurascens
“ “ omissa
“ crassirostris crassirostris
“ melanura
“ chrysopasta
Tangara chilensis
“ schranki
“ johannæ
“ xanthogastra
“ florida auriceps
“ vitriolina [1]
“ lavinia lavinia
“ palmeri
“ mexicana boliviana
“ inornata
“ larvata fanny
Buthraupis rothschildi
Thraupis episcopus leucoptera
“ cœlestis cœlestis
“ cana cana
“ glaucocolpa
“ palmarum melanoptera
Ramphocelus nigrogularis
“ dimidiatus dimidiatus
“ carbo carbo
“ “ unicolor
“ flammigerus
“ chrysonotus
“ icteronotus
Chlorothraupis olivacea
“ stolzmani
Phœnicothraupis gutturalis
Heterospingus xanthopygius
Tachyphonus rufus [1]
“ luctuosus
“ surinamus surinamus
“ delattri
Eucometis cristata cristata
Mitrospingus cassini
Erythrothlypis salmoni
Hemithraupis peruana
“ guira guirina
Cissopis leveriana minor
Schistochlamys atra

Family *Icteridæ*

Zarhynchus wagleri wagleri
Gymnostinops guatimozinus
“ yuracares
Ostinops decumanus
“ angustifrons
Cacicus cela

---

[1] Ranging upward to the Subtropical Zone.

Cacicus vitellinus
" hæmorhous affinis
" uropygialis pacificus
Amblycercus solitarius
" holosericeus flavirostris [2]
Cassidix oryzivora violea [1]
Molothrus bonariensis atronitens
" " cabanisi
" " æquatorialis
Agelaius icterocephalus icterocephalus
Leistes militaris
Icterus auricapillus
" mesomelas salvini
" hondæ
" xanthornus xanthornus
Megaquiscalus major assimilis

Family *Corvidæ*

Cyanocorax affinis affinis
" violaceus

THE FAUNAS OF THE TROPICAL ZONE.

The Colombian-Pacific Fauna.— The fauna for which I propose this name is one of the most circumscribed and sharply defined, and possibly the most strongly characterized of any fauna of tropical South America. Certainly no other area of similar extent in the Tropical Zone has so many birds which are peculiar to it.

In brief, this fauna occupies the entire humid Pacific coast region of tropical South America. This includes the whole extent of the Colombian coast and the more northern portions of the coast region of Ecuador. Its southern limits are marked by the northern limit of what may be termed the Equatorial Arid Fauna.

The boundaries of these faunas remain to be determined. Roughly speaking they may be found in the Province of Manavi, where the Arid Fauna finds its northern limit near Bahia Caraque. The humid Colombian-Pacific here recedes from the coast and extends south of Bahia Caraque in the region of heavier rainfall near the base of the Andes.

Northward, the Colombian-Pacific Fauna contributes an important element to the composite life of the lower Cauca-Magdalena district, which it enters through the forested region at the end of the Western Andes; northwestward it continues into the Tuyra region of eastern Panama, where it is also associated with Cauca-Magdalena species, which, like *Ostinops decumanus* and *Donacobius atricapillus albivitta*, are of purely eastern origin.

Many Central American species appear to have been derived from this small but important area, and its influence may be traced even into southern Mexico; but as a fauna, we may perhaps set its northern boundaries in the Tuyra River system of eastern Panama.

Climatically, the Colombian-Pacific Fauna is distinguished by an exceptionally heavy rainfall. Exact meteorological data are lacking, but, as elsewhere stated, the precipitation at San José, east of Buenaventura, on the Colombian coast, reached 400.88 inches in the year 1912, an amount doubtless not equalled in any other part of the Western Hemisphere.

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[1] Ranging upward to Subtropical Zone.

[2] Ranging upward to the Temperate Zone.

There is no marked dry season in those portions of this region with which we are familiar and, as might be expected, it is everywhere covered with luxuriant tropical forests.

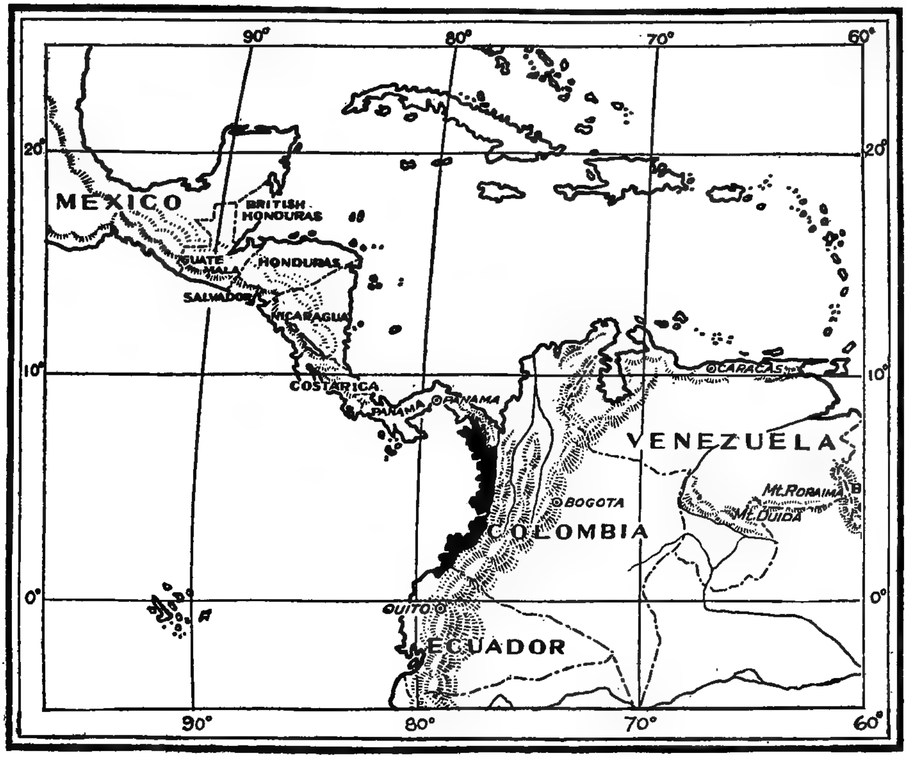
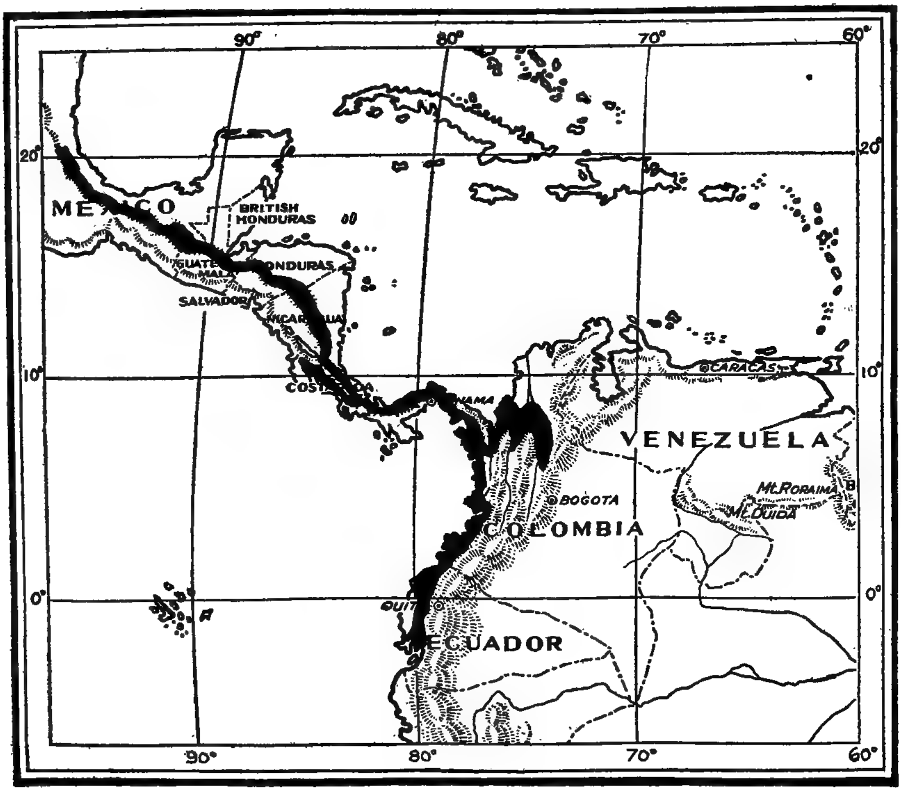

90°
80°
70°
60°
20°
10°
0°
MEXICO
BRITISH HONDURAS
GUATEMALA
HONDURAS
SALVADOR
NICARAGUA
COSTA RICA
PANAMA
PANAMA
CARACAS
VENEZUELA
BOGOTA
COLOMBIA
Mt. Roraima
Mt. Duida
QUITO
ECUADOR
90°
80°
70°
60°

Fig. 3. Known Range of *Sapoyoa ænigma*, a Characteristic Species of the Colombian-Pacific Fauna of the Tropical Zone.

The arid pockets, like the upper Dagua basin, which lie between the coastal forests and those of the Subtropical Zone, have nothing in common with the Colombian Pacific Fauna, their life evidently having been derived from the dryer country lying to the east of the Western Andes.

Some 150 species and subspecies are now known from Colombia which are largely or wholly restricted to the Colombian-Pacific Fauna. Others, known as yet only from Ecuador, doubtless occur in it; for it must always be remembered that not only are there portions of this fauna which have never been visited by an ornithologist, but also that in no other part of tropical America is the collector confronted by more unfavorable conditions than those which prevail in the humid coastal district of Colombia.

Of the 150 species and subspecies which are known to characterize this fauna in Colombia, less than fifty can be classed as representative races of widely distributed species, leaving therefore approximately one hundred, or two-thirds the known characteristic forms, as autocthonous.


90°
80°
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20°
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0°
MEXICO
BRITISH HONDURAS
GUATEMALA
HONDURAS
SALVADOR
NICARAGUA
COSTA RICA
PANAMA
CARACAS
VENEZUELA
Mt.RORAIMA
Mt.DUIDA
BOGOTA
COLOMBIA
QUITO
ECUADOR

Fig. 4. Range of *Zarhynchus wagleri.* A Tropical Zone species of the Pacific Coast which ranges northward to Mexico.

This remarkably large proportion for a continental area of such comparatively limited size indicates that the environment is unusual, the isolation effective, and possibly also that the region was formerly more extensive.

It is not probable that the environment differs appreciably from the densely forested region lying at the eastern base of the Andes; but that this humid Pacific coastal region is isolated from other regions of essentially similar character is evident.

To the south, the arid coasts of Peru and northern Chile extend far below the limits of the Tropical Zone. To the east the Andes form an evidently impassable bulwark three zones high, the upper two of which are largely or wholly devoid of forest growth. To the west, lies the Pacific Ocean and, consequently, under existing topographic conditions, these luxuriant coastal forests of northern Ecuador and western Colombia can have received their life only from the north.

That some of their forms have entered it from this direction is obvious; but they are to be found among the fifty races which represent widely distributed and chiefly Amazonian species. Examples are *Cymbilaimus lineatus fasciatus, Myrmotherula surinamensis pacifica, Tityra semifasciata esmeraldæ, Stelgidopteryx r. uropygialis, Basileuterus fulvicauda, Arremon e. occidentalis,* and other birds which have what may be called a *completed* distribution, that is, occupy all the territory in which they might be expected to occur.

Once having reached the forested, lower Cauca-Magdalena district, in which they are all represented, there is nothing to prevent these species from ranging southward to western Ecuador through the Colombian coastal forests.

We cannot, however, regard this Cauca-Magdalena district as the gateway into the Colombian-Pacific Fauna for those west coast species which are unknown in the Cauca-Magdalena Fauna. Many of these, as has been said, advance westward and northward into Central America and it may be suggested that the autocthonous Colombian-Pacific forms have originated in Central America, since access from other areas seems to be impossible under existing conditions.

Possibly some of them may have been so derived, but the fact that a large part of them are unknown north of eastern Panama prohibits a belief in their northern origin. Even those species which like *Neomorphus salvini* and *Selinidera spectabilis* are found as far north as Nicaragua, assuredly cannot be considered to have entered the Colombian-Pacific Fauna from the north. Both belong to Amazonian groups, and both, in South America, are known west of the Andes only in the humid coast region; neither having been recorded from the lower Cauca-Magdalena district or from western Venezuela. Other species fall into this same class, that is, they are represented in the Colombian-Pacific Fauna and also east of the Andes, but at the north their ranges are apparently not connected. A list of certain species in this interesting group is given at the end of this section. In their distribution I believe that we have a clue to the origin of many species of the humid Ecuador-Colombian littoral whose presence in that region may not be otherwise accounted for. Briefly, these forms appear to have been derived from upper Amazonia before the Andes had acquired a sufficient altitude effectually to separate, as they do now, the Tropical Zones at their eastern and western bases.

A strong affinity exists also between the fresh-water fishes of these two regions. Scharf remarks: "The fresh-water fish fauna of the Pacific slopes of southern Ecuador still exhibits such affinity to that of the Amazon, that the Ecuador mountains could only have had a slight elevation until comparatively recent geological times."[1]

Henn, in confirmation of these statements, writes that "the fishes of the Pacific slope are in general widely distributed Amazonian types; none of them would cause surprise if taken at Manaos."[2]

Wolf states that the flora of humid western Ecuador is essentially like that of Panama and the Chocó region of western Colombia, and adds many species are identical with or belong to the same genus as those found on the eastern slopes of the Andes. (Geographia y Geologia del Ecuador p. 439.)

Having in mind the possibility of the Amazonian origin of the Pacific humid fauna, W. B. Richardson in 1913, after his explorations for the American Museum on the Ecuador coast, made, at our request, a section across the Andes from Santa Rosa, south of Guayaquil, through Zaruma and Loja to Zamora in the Tropical Zone at the eastern base of the Andes. It is proposed to report on his collections and notes in a subsequent paper, but in this connection it may be said that the results of his journey strongly suggest, as the topography of the region indicates, that this section was one of the latest to be closed to the passage of Tropical Zone forms from one side of the Andes to the other.

In journeying from Loja to Zamora, Richardson crossed the intervening mountains, which here attain an altitude of 11,500 feet; but the Rio Zamora, rising in the Loja Valley breaks through these mountains at a much lower elevation, below of course, that of Loja, which is given by Richardson as 7260 feet.

This theory of the transandean origin of the Pacific humid fauna affords a satisfactory explanation for the presence in western Ecuador and southwestern Colombia of a number of common species which are also represented in eastern Panama, or the Cauca-Magdalena district, but are unknown on

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[1] Distribution and Origin of Life in America, 1912, p. 360.

[2] Arthur Henn, Science, N. S., XL., 1914, p. 603.

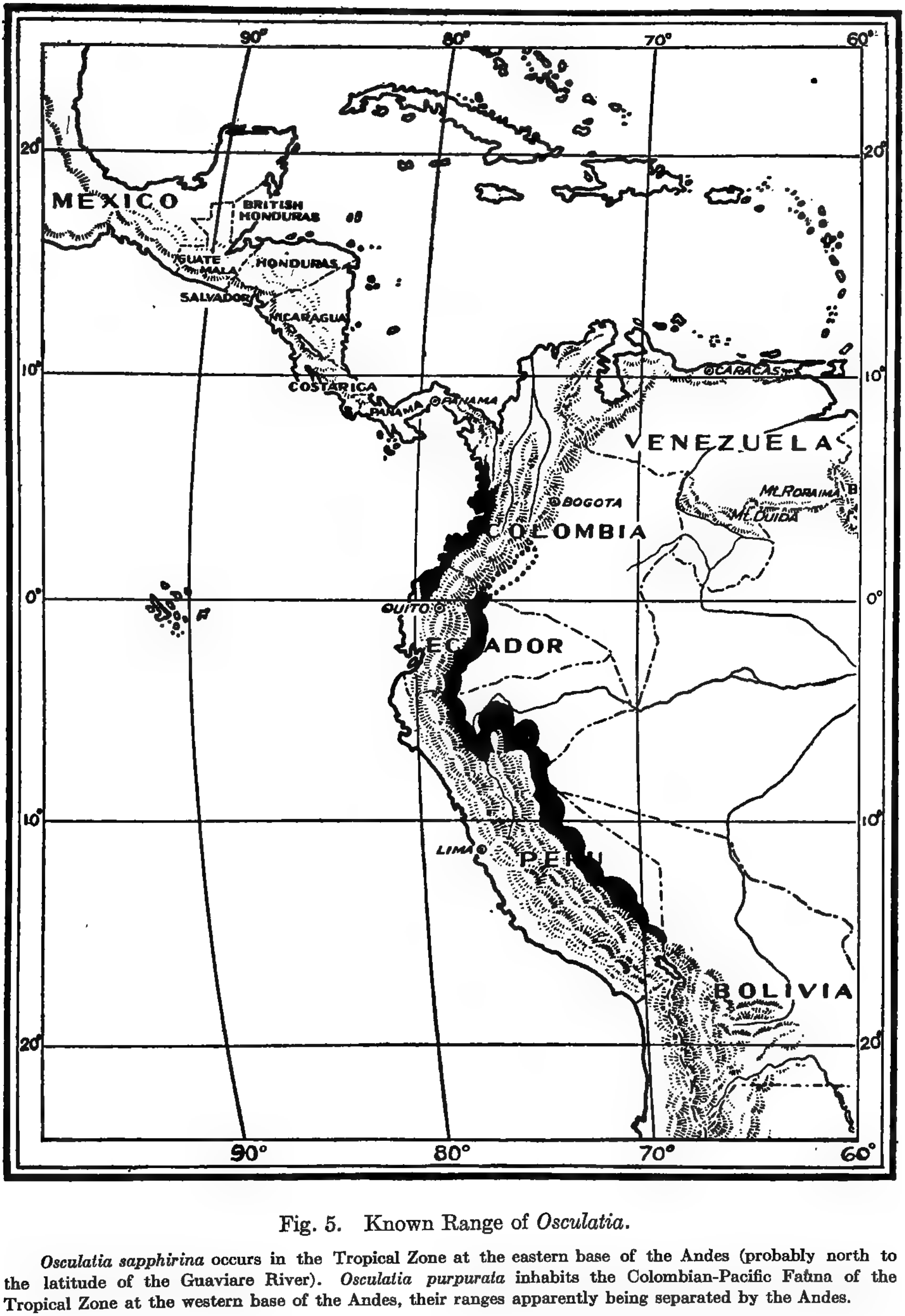
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Fig. 5. Known Range of *Osculatia*.

Osculatia sapphirina occurs in the Tropical Zone at the eastern base of the Andes (probably north to the latitude of the Guaviare River). *Osculatia purpurata* inhabits the Colombian-Pacific Fauna of the Tropical Zone at the western base of the Andes, their ranges apparently being separated by the Andes.

the west coast of Colombia north of the Patia River. Reaching western Ecuador, before the Loja region had attained its present altitude, they have also advanced westward around the northern end of the Andes in Colombia, but have not as yet completed their distribution either by ranging northward from Ecuador or southward from northern Colombia.

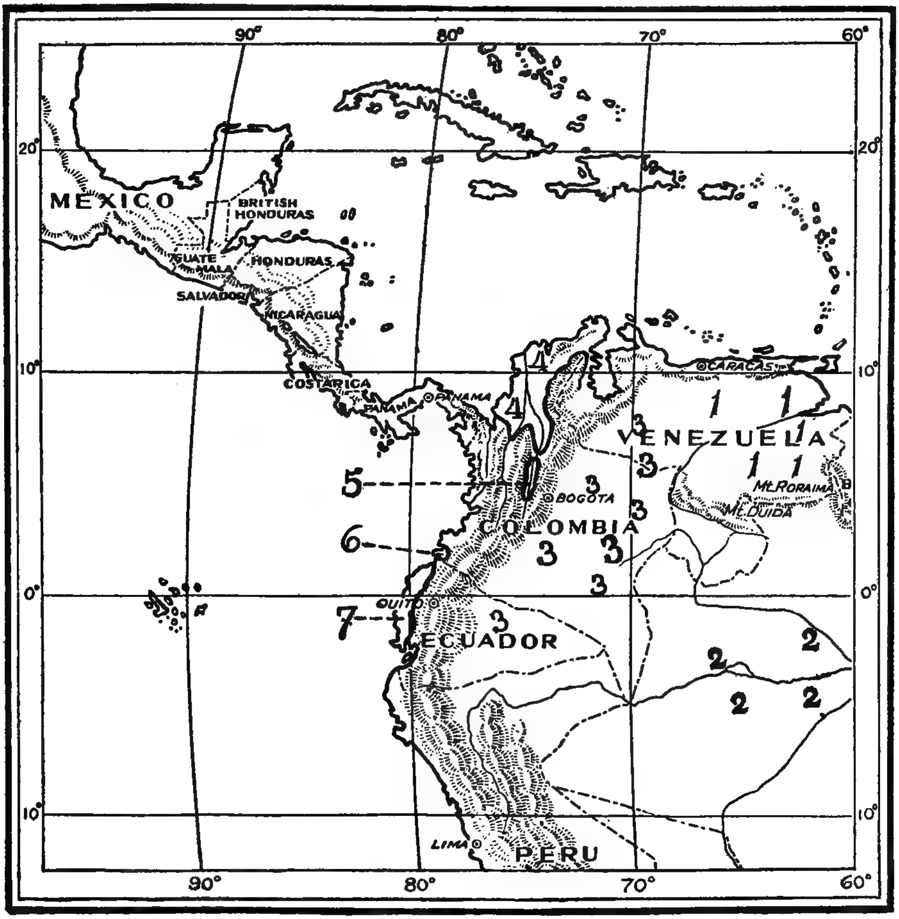
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Fig. 6. Distribution of the western races of *Manacus manacus*. Illustrating the apparent absence on the Pacific coast north of the Patia River of a common, widely distributed Amazonian species which is found in western Ecuador and northern Colombia.

1. *Manacus manacus manacus*.
2. *Manacus manacus purus*.
3. *Manacus manacus interior*.
4. *Manacus manacus abditivus*.
5. *Manacus manacus flaveolus*.
6. *Manacus manacus bangsi*.
7. *Manacus manacus melanochlamys*.

Doubtless the absence of some of these species from western Colombia may be apparent rather than real, but such common, conspicuous species as *Manacus manacus,* and *Arremenops conirostris* are not likely to escape the collector, if present. Possibly the heavy forests of the Colombian-Pacific may have prevented the entrance of *Arremenops* into this region, but this explanation cannot be offered to account for the absence of *Curucujus melanurus,* while the theory of transandean origin will explain why the west Ecuador form of this species should agree with that of Amazonia (*C. melanurus melanurus*) rather than with that of the Cauca-Magdalena district (*C. m. macrourus*).

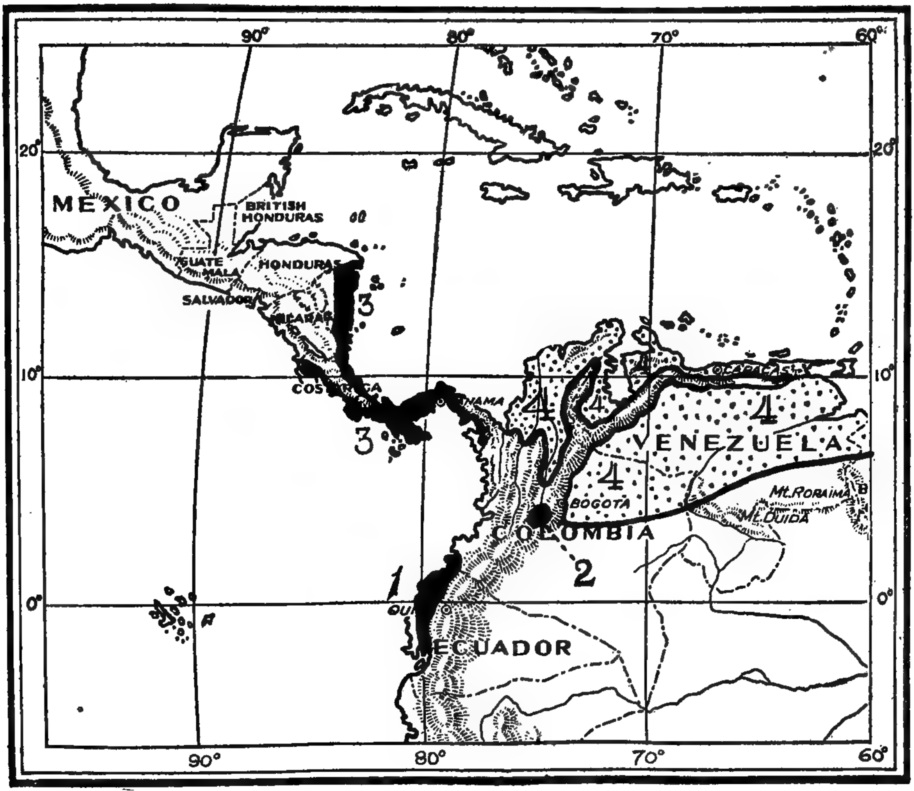
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Fig. 7. Known range of *Arremonops conirostris.* Illustrating the apparent absence on the Colombia-Pacific coast, north of the Patia River, of a species represented in Panama and northern Colombia by the same or an allied species.

1. *Arremenops conirostris chrysoma.* 2. *Arremenops conirostris inexpectata.*
3. *Arremenops conirostris richmondi.* 4. *Arremenops conirostris conirostris.*

Even within the restricted limits of the Colombian-Pacific Fauna and under the uniform conditions which prevail in it, considerable racial variation has occurred. Note, for example, the distribution of the *Capito-squamatus-maculicoronatus* group as mapped herewith. Forms from the Atrato River not infrequently differ more or less from those from the San Juan River and southward, and others living south of the Patia differ from those found north. This river indeed appears to form the northern limit of a number of species, but in view of the lack of knowledge of the coast region lying between the Patia and Buenaventura, it is not well to be positive in this connection.

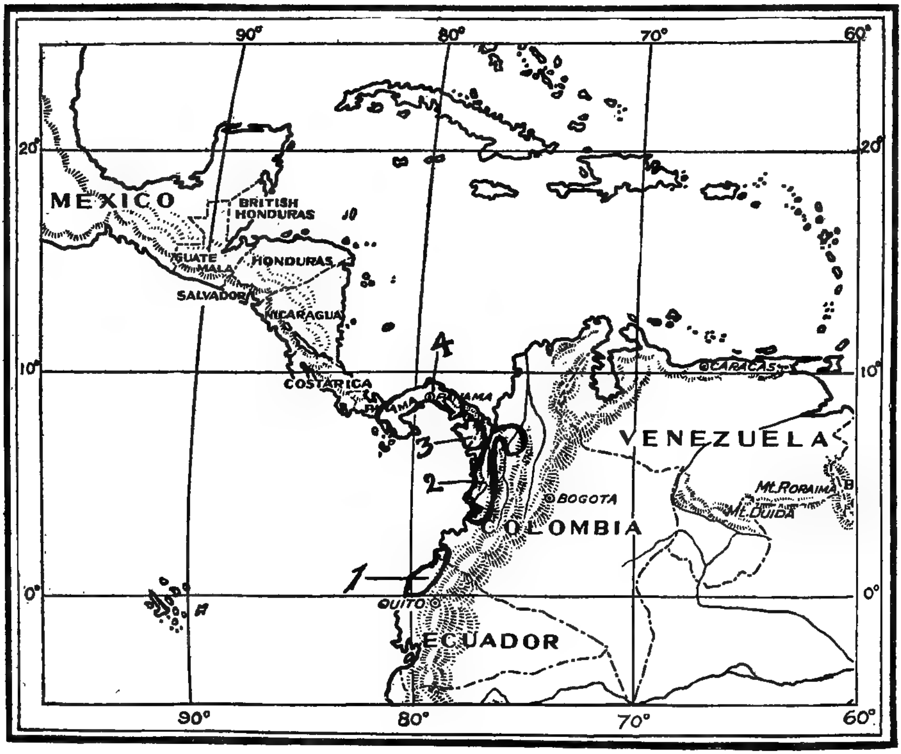
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Fig. 8. Ranges of *Capito squamatus* and *C. maculicoronatus* — to illustrate the breaking up of a characteristic Colombian-Pacific Fauna group into a distinct species south of the Patia River and three races north of it.

1. *Capito squamatus.*
2. *Capito maculicoronatus rubrilateralis.*
3. *Capito maculicoronatus pirrensis.*
4. *Capito maculicoronatus maculicoronatus.*

List of Species and Subspecies which Characterize the Colombian-Pacific Fauna.

Tinamus major latifrons [1]
Crypturus kerriæ
“ berlepschi
“ soui modestus
Crax panamensis
Penelope ortoni
Odontophorus parambæ
Rhynchortyx cinctus australis
Columba goodsoni
Columba subvinacea berlepschi
Leptotila plumbeiceps
“ pallida
“ cassini [2]
Osculatia purpurata
Oreopeleia veraguensis
Aramides wolfi
Creciscus albigularis
Leucopternis plumbea
“ semiplumbea
Herpetotheres cachinnans fulvescens
Pyrrhura melanurus pacifica [1]
Eucinetus pulchra
Electron platyrhynchus platyrhynchus
Antrostomus rosenbergi [1]
Androdon æquatorialis
Threnetes ruckeri fraseri
Glaucis ænea
Phœthornis yaruqui sancti-johannis
“ striigularis subrufescens
Eutoxeres aquila salvini
“ “ heterura
Polyerata rosenbergi
“ amabilis
Amazilis tzacatl jucunda
Hylocharis humboldti
Thalurania fannyi fannyi
Chalybura urochrysa
Boissoneaua jardini
Heliothrix barroti
Trogonurus strigilatus chionurus
Curucujus massena australis
Neomorphus salvini
Capito maculicoronatus rubrilateralis
“ squamatus [1]
“ quinticolor
Ramphastos swainsoni
“ ambiguus abbreviatus
Pteroglossus sanguineus
Selinidera spectabilis
Galbula melanogenia
Notharcus pectoralis
Nystactes noanamæ
Nystalus radiatus
Malacoptila poliopis poliopis [3]
“ “ panamensis [2]
Micromonacha lanceolata [1]
Monasa pallescens pallescens [2]
Chloronerpes litæ
Melanerpes pucherani pucherani
Celeus loricatus loricatus [3]
Celeus loricatus mentalis [2]
Cniparchus hæmatogaster splendens
Picumnus olivaceus harterti [1]
Cymbilaimus lineatus fasciatus
Thamnistes anabatinus intermedius
Dysithamnus puncticeps puncticeps [2]
“ “ flemmingi [1]
Myrmotherula surinamensis pacifica
Myrmopagis fulviventris
“ axillaris albigula
Microrhopias boucardi consobrina
Microbates cinereiventris cinereiventris
Cercomacra berlepschi
Anoplops bicolor bicolor [2]
“ “ daguæ [4]
“ “ æquatorialis [1]
Myrmelastes immaculatus berlepschi
Phænostictus macleannani macleannani
Myrmeciza maculifer maculifer [3]
“ “ cassini [2]
“ læmosticta nigricauda
Hylophylax nævioides
Formicarius nigricapillus destructus
Pittasoma harterti [1]

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[1] Known only from south of the Patia River.
[2] Known only from north of the San Juan region.
[3] Known only from south of the San Juan region.
[4] San Juan River Region.

Pittasoma rosenbergi[4]
“ michleri[2]
Grallaria guatimalensis chocoensis
“ perspicillata perspicillata[2]
“ “ periopthalmica[1]
Hylopezus dives barbacoæ[1]
Synallaxis pudica nigrofumosa
Automolus nigricauda saturatus[3]
Hyloctistes subulatus assimilis
Xiphorhynchus æquatorialis æquatorialis
“ lachrymosus lachrymosus
Campylorhamphus thoracicus[1]
Craspedoprion pacificus
Rhynchocyclus marginatus marginatus
Todirostrum sclateri[1]
Lophotriccus squamæcrista minor[3]
Cnipodectes subbrunneus
Myiobius villosus
“ sulphureipygius aureatus
Myiobius litæ
Terenotriccus erythrurus fulvigularis
Mitrephanes berlepschi eminulus
Tyrannus niveigularis[1]
Pipra mentalis minor
Allocopterus deliciosus[1]
Chloropipo holochlora litæ
Corapipo altera altera
Manacus manacus bangsi[1]
“ vitellinus vitellinus
Scotothorus turdinus rosenbergi
Sapoyoa ænigma
Tityra semifasciata esmeraldæ[1]
Lathria unirufa castaneotincta
Lipaugus holerythrus holerythrus[2]
“ “ rosenbergi[3]
Euchlornis jucunda[1]
Cotinga nattereri
Carpodectes hopkei
Neochelidon tibialis
Stelgidopteryx ruficollis uropygialis
Poliptila livida daguæ
“ schistaceigula
Heleodytes albobrunneus harterti
Thryophilus nigricapillus schotti
“ leucopogon
Henicorhina inornata
Leucolepis phæocephalus phæocephalus
Microcerculus marginatus occidentalis
“ squamulatus antioquensis
Planesticus tristis daguæ
Pachysylvia minor
Dendroica petechia æquatorialis[1]
Basileuterus fulvicauda semicervinus
“ bivittatus chlorophrys[1]
Sporophila aurita aurita[2]
“ “ ophthalmica[3]
Arremonops conirostris chrysoma[1]
Arremon aurantiirostris occidentalis
Dacnis cayana cœrebicolor
Cyanerpes cyaneus pacificus
Tanagra xanthogastra chocoensis
Tanagra saturata
Tangara florida auriceps
“ johannæ
“ palmeri
“ lavinia lavinia
Buthraupis rothschildi
Ramphocelus icteronotus
Chlorothraupis olivacea
“ stolzmani[1]
Heterospingus xanthopygius
Tachyphonus delattrii
Mitrospingus cassini
Erythrothlypis salmoni
Zarhynchus wagleri wagleri
Cacicus uropygialis pacificus
Molothrus bonariensis æquatorialis[1]

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[1] Known only from south of the Patia River.
[2] Known only from north of the San Juan region.
[3] Known only from south of the San Juan region.
[4] San Juan River Region.

List of Species or Representative Forms Found in the Tropical Zone of Southeastern Colombia and Eastern Ecuador and Western Colombia and Northwestern Ecuador, the Ranges of Which, Separated by the Andes, are not Known to be Connected.[1]

Eastern or Amazonian	*Western or Pacific*
Leptotila rufaxilla pallidipectus	Leptotila rufaxilla dubusi
Osculatia sapphirina	Osculatia purpurata
Pyrrhura melanura melanura	Pyrrhura melanura pacifica
Electron platyrhynchus pyrrholæmus	Electron platyrhynchus platyrhynchus
Curucujus melanurus melanurus	Curucujus melanurus melanurus
Selinidera reinwardti	Selinidera spectabilis
Micromonacha lanceolata	Micromonacha lanceolata
Thamnistes æquatorialis	Thamnistes anabatinus intermedius
Microrhopias quixensis	Microrhopias boucardi consobrina
Microbates collaris	Microbates cinereiventris cinereiventris
Hylopezus dives fulviventris	Hylopezus dives barbacoæ
Hyloctistes subulatus subulatus	Hyloctistes subulatus assimilis
Dendrocolaptes sancti-thomæ radiolatus	Dendrocolaptes sancti-thomæ sancti-thomæ
Myiotriccus phœnicurus	Myiotriccus ornatus stellatus
Hapalocercus meloryphus [2]	Hapalocercus meloryphus
Cnipodectes subbrunneus minor	Cnipodectes subbrunneus subbrunneus
Chloropipo holochlora holochlora	Chloropipo holochlora litæ
Manacus manacus interior	Manacus manacus bangsi “ “ melanochlamys
Cephalopterus ornatus	Cephalopterus penduliger
Leucolepis salvini	Leucolepis phæocephalus phæocephalus
Sporophila aurita murallæ	Sporophila aurita ophthalmica
Arremonops conirostris conirostris	Arremonops conirostris chrysoma
Tanagra schranki	Tanagra florida auriceps
Cacicus cela	Cacicus flavicrissus

The Cauca-Magdalena Fauna.— The faunal area to which I would apply the name Cauca-Magdalena embraces that part of the Tropical Zone which is drained by the Cauca and Magdalena River systems from their source northward to the arid coastal region, or Caribbean Fauna.

It is divisible into arid and humid sections. The former embraces the entire Cauca Valley and extends northward into Antioquia nearly to the upper limits of navigation on the lower Cauca, and also the upper Magdalena Valley from its head northward to the upper limits of heavy forest growth near La Dorada. The latter includes the lower Cauca-Magdalena forests which cover the bottomlands and lower slopes of the mountains from La Dorada northward to the vicinity of Banco. To the northeast the country bordering the Rio Cesar is of the open, savanna type, and belongs to the Caribbean Fauna, but it is possible that a belt of Tropical Zone forest skirts the Eastern Andes and crosses its northern end to connect with the forests of the southern Maracaibo district.[1] This connection, however, is not known by me to exist. In any event, it is not probable that the association of species forming the Cauca-Magdalena Fauna extends far into the Cesar Valley.

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[1] In a future paper on the distribution of bird-life in Ecuador it is proposed to treat more fully of the origin of the avifauna of the Tropical Zone of the Pacific Coast. In this connection I present only some of the more striking instances of Tropical species common to both the Pacific Coast and eastern Ecuador and Colombia, whose range appears to be separated by the Andes.

[2] S. W. Ecuador, Magdalena Valley, and Amazonia, but unknown on Pacific-Colombian coast.

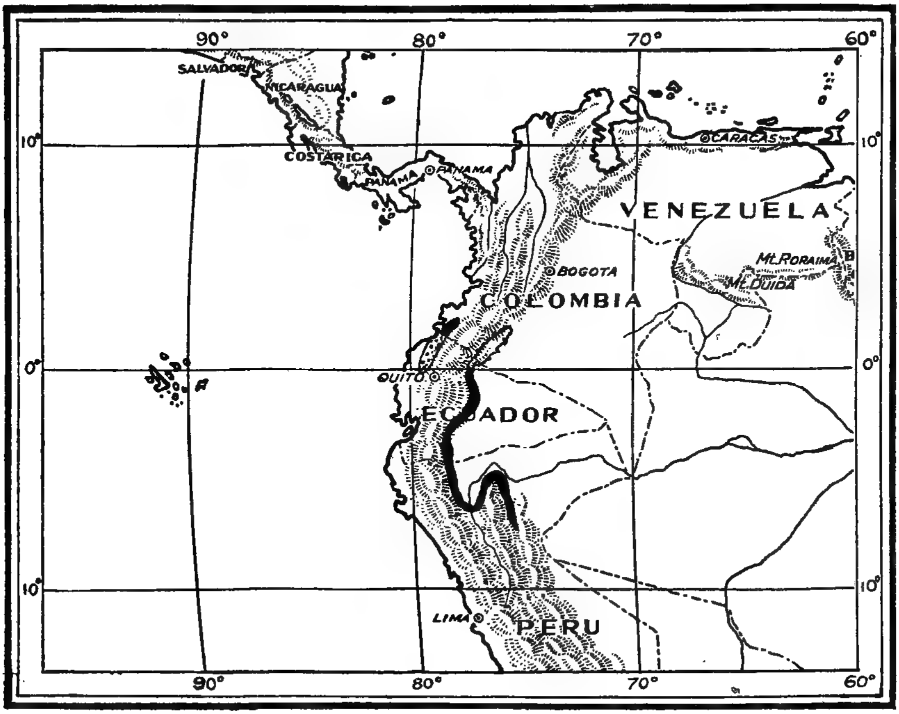

Fig. 9. Known distribution of *Micromonacha lanceolata*, a species of the Tropical Zone which is found at both the eastern and western bases of the Andes.

To the west, the Cauca-Magdalena Fauna reaches at least to the Tuyra district of eastern Panama, but from the lower Atrato Valley westward it merges so completely with the Colombian-Pacific Fauna that any attempt to map their respective boundary lines in this region must be purely arbitrary.

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[1] Compare Simons's map of the Goajira Peninsula (Proc. R. G. S., 1885) where a considerable area at the northeastern end of the Eastern Andes bears the name "Montes de Oca (woods)."

The Cauca-Magdalena Fauna possesses comparatively few species peculiar to itself, its life consisting chiefly of forms received from the Amazonian region on the east and Colombian-Pacific Fauna on the west. The result is a composite group to which neither of the above names could properly be applied. The region, however, is more than a meeting ground for species originating elsewhere. It contains a number of such strongly marked indigenous forms as *Capito hypoleucus*, *Xenerpestes minlosi*, and *Gymnostinops guatamozinus*, and for this reason, as well as for convenience in descriptive zoögeography, it is deserving of faunal rank.

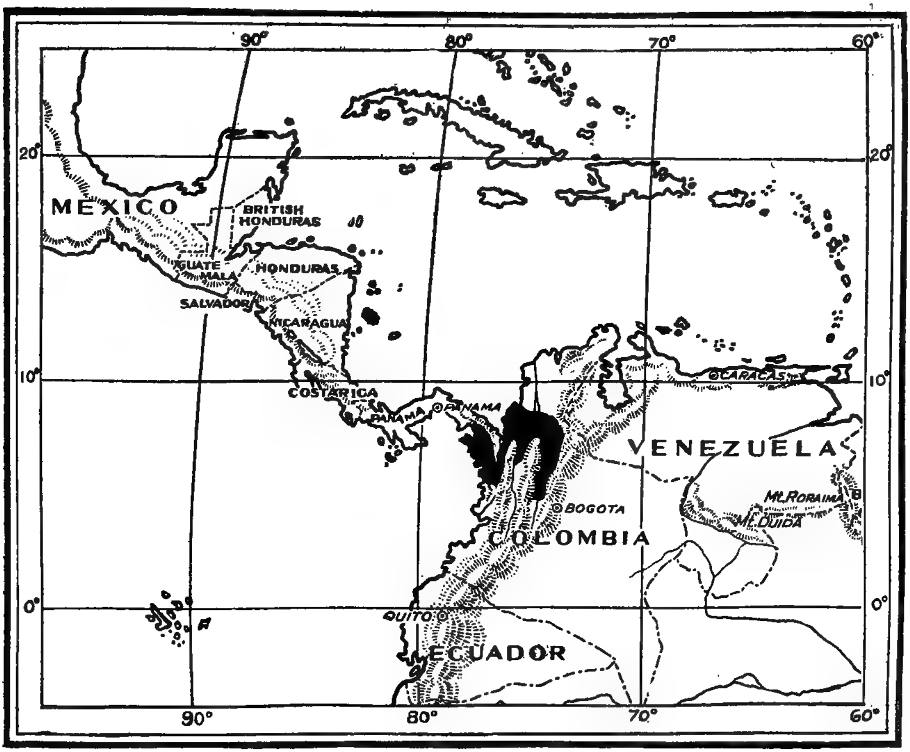
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Fig. 10. Known range of *Thamnophilus nigriceps Scl.* A species of the humid Colombian-Pacific Fauna of the Tropical Zone.

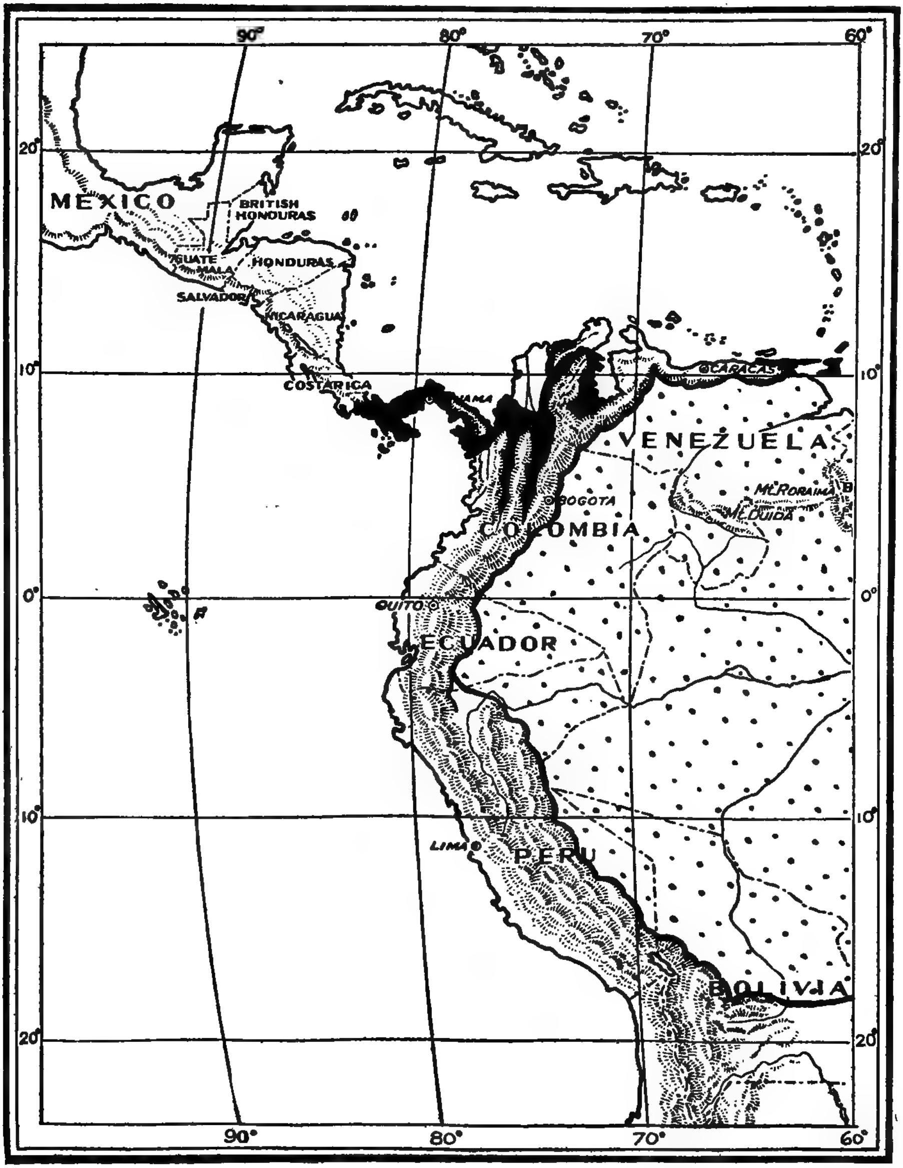
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Fig. 11. Range of *Ostinops decumanus*. A Tropical Zone, Amazonian species which enters Colombia from the east, extends southward up the Magdalena and Cauca Valleys and westward to western Panama, but is unknown on the Pacific Coast of Colombia except on the lower Atrato. Dotted area — General South American range. Black area — Range west of the Andes.

The humid portion of the Cauca-Magdalena Fauna lies chiefly in the Department of Antioquia. It is largely covered with heavy, primeval forest, and is connected with the forests of the Colombian-Pacific Fauna by the forested area at the northern end of the Western Andes. This continuous forest growth has made the lower Cauca-Magdalena district easy of access to Pacific coast forms, which have entered it in such large numbers that it might well be considered a part of the Colombian-Pacific Fauna, had not invasion from the east given the Amazonian region even greater claims upon it.

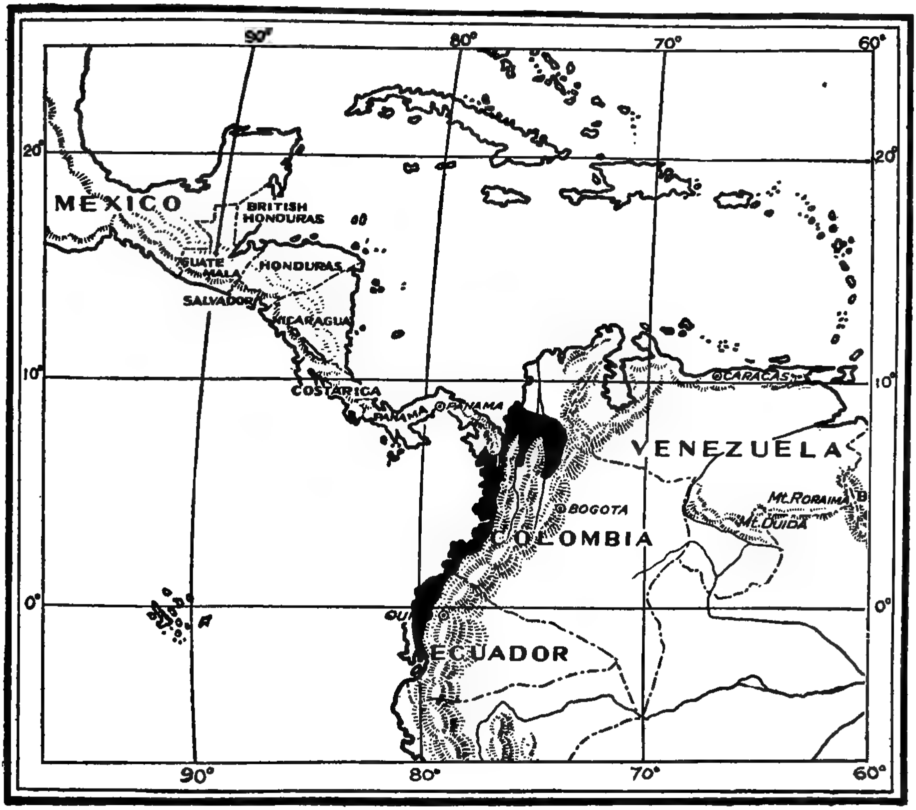
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Fig. 12. Known range of *Myrmeciza exsul.* A species which enters the Cauca-Magdalena Fauna from the west.

When, however, one compares the narrow strip of country lying to the west with the vast area lying to the east, the proportion of western to eastern forms is surprisingly large. It is, however, to be especially noted that whereas many of the Amazonian forms have crossed the Cauca-Magdalena district and entered Panama and even Central America, no distinctly Pacific coast species appears to have gone east over the route at the northern end of the Eastern Andes by which Amazonian species have traveled westward. This fact might indicate that in spite of the proximity of the district whence it has been derived, the west coast element is of more recent origin, but a comparison of the changes which have occurred in both groups since their establishment in the humid Cauca-Magdalena Fauna does not confirm this theory, species of western origin showing as much racial variation as those from the east.

The abrupt cessation of forest growth on the floor of the Magdalena Valley at La Dorada marks the southern limit of the range in that valley of the forest-inhabiting species which characterize the humid Cauca-Magdalena Fauna. Tropical Zone forest extends at least as far south as the latitude of Honda, on the slopes of the mountains, carrying with it such forest-loving species as *Myrmelastes immaculatus* and *Formicarius analis saturatus*, but beyond this the avifauna of the Tropical Zone of the upper Magdalena Valley is composed of species which frequent plains, thickets and low scrubby woods. Examples are *Colinus cristata leucotis, Ortalis columbiana columbiana, Psittacula conspicillata conspicillata, Thamnophilus radiatus albicans, Myrmeciza l. boucardi, Arremenops conirostris conirostris* and *A. c. inexpectata, Thraupis c. cana, Thraupis palmarum melanoptera,* etc. With but few exceptions all the Tropical Zone species inhabiting the upper Magdalena Valley have evidently entered it from the north passing the forested area lying between Banco and La Dorada. Its life, therefore, resembles that of the arid lower Magdalena or Caribbean Fauna, rather than that of the Tropical Zone at the eastern base of the Eastern Andes in the same latitude.

Not only have these mountains proved a barrier to extension of range directly over them, but of equal, or in view of the low altitude of the Andalucia Pass (7000 ft.) of possibly greater importance, is the lack of forests in the upper Magdalena which would afford a favorable home for the species inhabiting the densely wooded region at the eastern base of the mountains.

In several instances, however, notably with species not so strictly confined by zonal boundaries as is customary, it is evident that forms of the extreme upper Magdalena Valley have entered it from the east over the mountains. The known examples are *Piaya cayana mesura* (upper Magdalena specimens agreeing with those of the eastern slope of the Andes instead of with those of the vicinity of Honda), *Conopophaga castaneiceps*

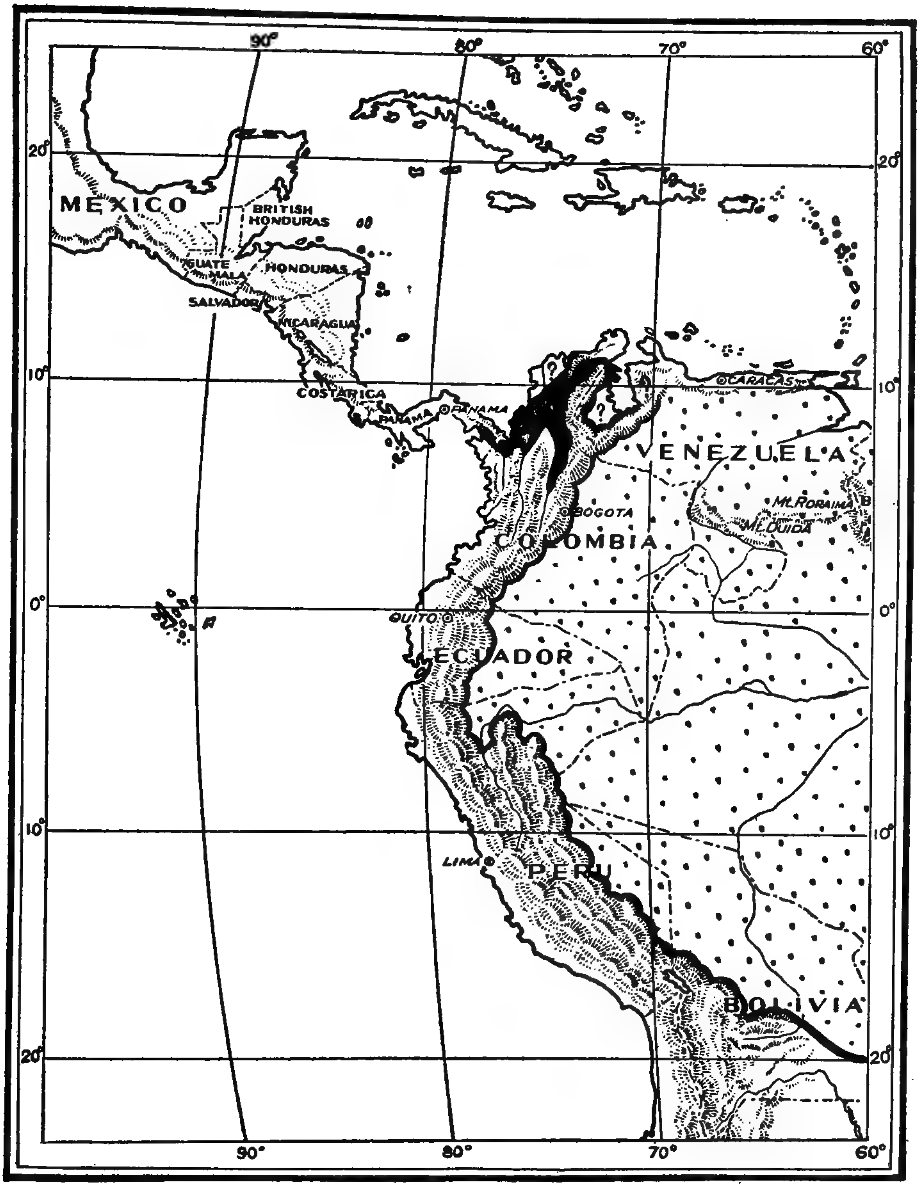
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Fig. 13. Range of *Donacobius atricapillus*. An Amazonian species which enters Colombia from the east, ascends the Magdalena Valley to at least Honda, crosses the lower Cauca-Magdalena district to the lower Atrato and Tuyra district in eastern Panama, but is unknown in the Cauca Valley.

Dotted area — general South American Range.

Black area — Colombia range.

castaneiceps (found in the forests on the west slopes below Andalucia), *Myiotriccus o. phœnicurus, Tanagra chilensis,* and *Schistochlamys atra.*

It should be added that our work has been done about the borders of this upper Magdalena district. Of the fauna of the floor of the valley, I feel that we have still much to learn.

The second southward extending arm of the Cauca-Magdalena Fauna enters the Cauca Valley from Antioquia and reaches almost to Popayan. It seems highly inaccurate to speak of so fertile a district as the Cauca Valley as arid, nevertheless, in the light of our present knowledge, it must be ranked as an arid branch of the Cauca-Magdalena Fauna.

The marshes and bayous of the Cauca River support a variety of aquatic and palustrine species unknown to the dryer upper Magdalena, but aside from this difference there is a marked similarity in the Tropical Zone life of each.

There is more forest growth in the Cauca than in the upper Magdalena Valley, in spite of widespread deforestation. Localities like those visited by Allen and Miller at Rio Frio, and the country through which we passed about Guengüe, seem well-adapted to the needs of forest-haunting species; nevertheless, we have thus far failed to find in the Cauca Valley a single representative of the families *Momotidae, Trogonidæ, Galbulidæ* or *Bucconidæ,* and but one species of Ramphastidœ, the widely distributed *Aulacorhynchus hæmatopygius.*

Possibly the comparatively limited amount of forest-growth may account for the apparent absence of those species of these groups which inhabit the lower Cauca region, and might therefore be expected to occur in the Cauca Valley. But it is evident that its isolation, and the fact that the Tropical Zone enters it at the north where it is separated from the forests of the lower Cauca by long stretches of treeless, truly arid country, are all factors which must be taken into consideration in accounting for its apparently limited life. That this life is actually limited I believe to be a fact, but I also believe that further collecting in the forests of the valley will result in the discovery of species which have not thus far been taken there.

In spite, therefore, of the physical differences between the upper Magdalena and Cauca Valleys, their land-bird life is much the same. In both instances it has been derived indirectly from east of the Andes by a current which appears to have flowed northward around the end of the Eastern Andes, and thence southward up to the heads of the valleys.

The upper Magdalena, being far more accessible geographically, and having a narrower belt of humid tropical forest at its mouth, has received the greatest number of species. The following common birds for example, of the upper Magdalena are as yet unknown from the Cauca Valley: *Broto-*

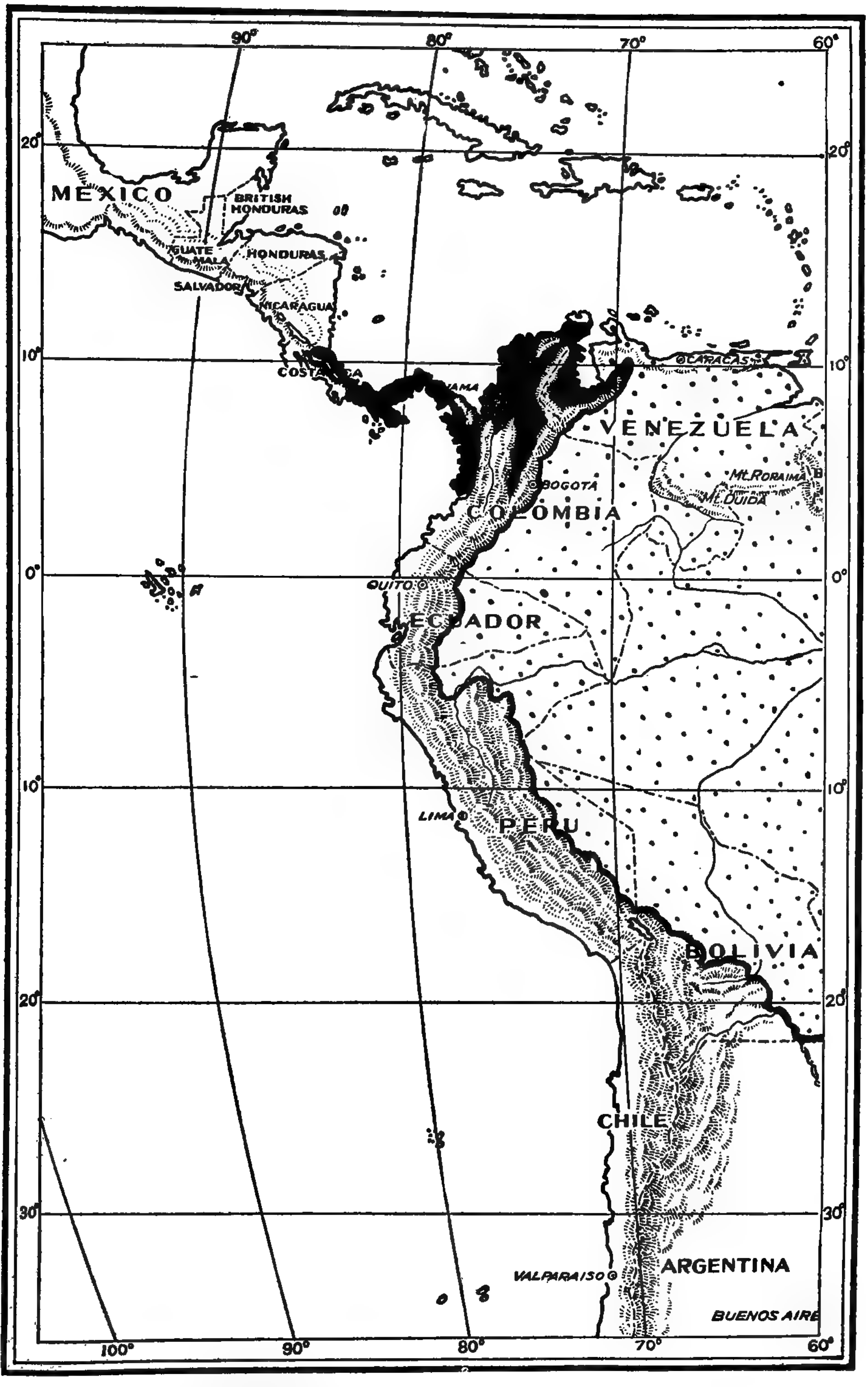
90°
80°
70°
60°
20°
10°
0°
10°
20°
30°
100°
90°
80°
70°
60°
MEXICO
BRITISH HONDURAS
GUATEMALA
HONDURAS
SALVADOR
NICARAGUA
COSTA RICA
PANAMA
VENEZUELA
CARACAS
Mt.RORAIMA
Mt.DUIDA
BOGOTA
COLOMBIA
QUITO
ECUADOR
LIMA
PERU
BOLIVIA
CHILE
ARGENTINA
VALPARAISO
BUENOS AIRE

Fig. 14. Range of *Thraupis palmarum*. A widely distributed South American Tropical species which enters Colombia from the east; ranges southward to the head of the Magdalena and westward through the lower Cauca-Magdalena district to the Pacific coast, north to Costa Rica, and as far south at least as Buenaventura, but is unknown from the Cauca valley.

Dotted area — General South American range.

Black area — Range in Colombia and adjoining territory.

geris jugularis, Galbula ruficauda, Myrmeciza longipes, boucardi, Furnarius agnatus, Atalatriccus p. pilaris, Hapalocercus meloryphus, Manacus manacus flaveolus, Heleodytes m. bicolor, H. brevirostris, Planesticus a. ephippialis, Saltator maximus, Arremenops conirostris, Thraupis palmarum melanoptera, Cyanocorax affinis, etc.

To this list others might be added. Doubtless further field work in the Cauca Valley will result in the discovery of some of them, but it seems clear that there will still remain a goodly number whose absence can be accounted for only by the isolation of the valley. I dwell on the fact for, it seems clearly to indicate *that the life of the Cauca was acquired under existing topographic conditions.*

Notwithstanding its nearness to the Pacific coast and the comparatively low altitude of the Western Andes, few species have entered the Cauca Valley from the Pacific coast. This cannot be wholly due to the differences in the physical characteristics of these two districts, since there are many species of the Pacific coast which would find a congenial home in the Cauca Valley, but which have evidently been prevented from entering it by the intervening mountains.

In the appended list of nineteen species common to the Pacific coast and Cauca Valley, at least thirteen are of East Andean origin, and are more likely to have entered the Cauca Valley from the lower Cauca-Magdalena district than from the Pacific coast. *Marila nationi* is a duck of unknown origin, *Leptotila plumbeiceps* occurs as far north as Central America and is doubtless found in the lower Cauca-Magdalena district, where *Pachyrhamphus dorsalis* is also found, leaving therefore only two species, *Tanagra saturata* and *Manacus vitellinus vitellinus* which with any certainty can be said to have entered the Cauca Valley from the Pacific coast.

The life of the Cauca Valley has been therefore derived, with surprisingly few exceptions, from that part of South America lying east of the Andes, and has but slight affinity with that of the Pacific-Colombian Fauna.

But if the Pacific coast has given but little to the life of the Cauca Valley, the valley has made noteworthy contributions to the arid upper Dagua Basin lying in the Tropical Zone on the western slope of the Western Andes. Of thirty-three species taken by Richardson at Caldas on the upper Dagua, sixteen are common to the Pacific coast and the Cauca Valley, thirteen are known from the Cauca Valley but not from the Pacific coast, while only one, *Sayornis n. cineracea,* is recorded from the Pacific coast but not from the Cauca Valley, where, however, it may occur. This case clearly illustrates the necessity of giving due consideration to suitability of environment in any attempt to solve distributional problems. The Pacific-Colombian Faunal area, an intensely humid district, cannot be expected to enter

CAUCA VALLEY FROM SAN ANTONIO

The Cauca Valley lies below and the Central Andes arise behind the clouds. Trail to Cali in the foreground. Taken from the lower border of bushy vegetation near the San Antonio Pass. (Junction of Tropical and Subtropical Zones.)

CAUCA VALLEY FROM MIRAFLORES

Note the level valley floor. The Western Andes appear in the background. (Junction of Tropical and Subtropical Zones.)

largely into the Cauca Valley, a comparatively arid district; but the tropical life of the valley, on the other hand, has crossed the Subtropical Zone of the Western Andes and entered a favorable environment on its western slope.

It should be noted, however, that on the treeless lower slopes of the eastern side of the Western Andes, the Tropical Zone extends to a greater altitude than it does on the humid western slopes. At San Antonio and Cresta de Gallo, for example, it practically reaches the divide from which one can almost see the Dagua basin, the upper margin of which lies not more than 1200 feet below. Only a small barrier, therefore, prevents the passage of species from the Cauca Valley to the upper Dagua Valley.

On the western slopes of the Western Andes, the humid Tropical Zone does not attain so great an altitude as does the arid Tropical Zone on its eastern side, and the Subtropical Zone to be crossed is correspondingly wider.

In spite of its isolation from other regions possessing similar characteristics, the Cauca Valley has given rise to but few geographical forms, and this fact in connection with its apparently limited life suggests that the existing fauna has been acquired at a comparatively recent date.

It had occurred to me that possibly the floor of the Cauca Valley is an ancient lake-bed but with no geological evidence to support this theory, I had hesitated to advance it, but on re-reading Robert Blake White's 'Notes on the Central Provinces of Colombia' (Proc. R. G. S., V, 1883, p. 250) after the preceding observations had been written, I find this exceedingly interesting statement: "Directly to the eastward of this group [Supia and Tadó Moros] of igneous rocks lies the great volcanic centre of Herveo, Tolima and Santa Isabel, and there can be no doubt that the valley of the upper Cauca was for some time in the post-tertiary period converted into a lake, owing to the upheaval of the flanks of the volcanoes mentioned. However, their action also produced a fracture parallel to the opposing western cordillera, and the waters of the Cauca at last worked their way northwards and now run through one of the grandest ravines imaginable."

Here then, we have an apparently satisfactory explanation of the character of the Cauca Valley fauna, which appears indeed to be of post-Andean origin.

List of Species and Subspecies which Characterize the Humid Cauca-Magdalena Fauna.

Crax alberti
Amazona salvini
Pyrilia pyrilia
Momotus subrufescens subrufescens
"   "   reconditus
Capito hypoleucus
Ramphastos citreolæmus
Brachygalba salmoni
Campephilus malherbi
Thamnophilus nigriceps

?Clytoctantes alixi
Xenerpestes minlosi
Gymnocichla nudipes sanctæ-martæ
Todirostrum nigriceps
Corapipo leucorrhoa
Pachyrhamphus magdalenæ
Heleodytes zonatus brevirostris
Thryophilus leucotis
Pheugopedius fasciato-ventris fasciato-ventris
Tanagra concinna
Tangara inornata
Phœnicothraupis gutturalis
Gymnostinops guatimozinus
Cacicus vittellinus

Tropical Zone Species which enter the Humid Cauca-Magdalena Fauna from the West.

Crypturus "boucardi" (*vide* Scl. & Salv.)
Leptotila cassini
Oreopeleia veraguensis
Creciscus albigularis
Leucopternis semiplumbea
Electron platyrhynchus minor
Chætura spinicauda fumosa
Androdon æquatorialis
Polyerata amabilis
Heliothrix barroti
Anthracothorax nigricollis nigricollis
Trogonurus strigilatus chionurus
Capito maculicoronatus rubrilateralis
Ramphastos swainsoni
Notharcus pectoralis
Nystalus radiatus
Malacoptila panamensis panamensis
Monasa pallescens sclateri
Melanerpes pucherani pucherani
Celeus loricatus mentalis
Cniparchus hæmatogaster splendens
Dysithamnus puncticeps puncticeps
Myrmopagis fulviventris
Microrhopias boucardi consobrina
Microbates cinereiventris magdalenæ
Myrmelastes immaculatus immaculatus
Phænostictus macleannani macleannani
Myrmeciza maculifer cassini
Myrmeciza læmosticta nigricauda
“ longipes panamensis
Hylophylax nævia nævioides
Hylopezus perspicillata perspicillata
Xiphorhynchus lachrymosus alarum
Dendrocolaptes sancti-thomæ sancti-thomæ
Cnipodectes subbrunneus
?Rhynchocyclus marginatus marginatus
Pipra velutina
Manacus vitellinus milleri
Lathria unirufa castaneotincta
Lipaugus holerythrus holerythrus
Cotinga nattereri
Neochelidon tibialis
Polioptila schistaceigula
Thryophilus nigricapillus schotti
Leucolepis phæocephalus phæocephalus
Oryzoborus funereus
Dacnis venusta fuliginata
Dacnis egregia egregia
Tanagra saturata
Tangara larvata fanny
Ramphocelus icteronotus
Chlorothraupis olivacea
Heterospingus xanthopygius
Tachyphonus delatri
Mitrospingus cassini
Erythrothlypis salmoni
Zarhynchus wagleri wagleri
Cacicus uropygialis pacificus
Cyanocorax affinis affinis

Tropical Zone Species which enter the Humid Cauca-Magdalena Fauna from the East.[1]

Odontophorus guianensis marmoratus
Aramides cajanea cajanea
Phaëtusa chloropoda
Rhynchops nigra cinerascens
Jacana nigra
Phimosus berlepschi
Jabiru mycteria
Agamia agami

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[1] Only species which are unknown in western Ecuador, and whose eastern origin is therefore undoubted, are here included.

Pilherodias pileatus
Ixobrychus erythronotus
Chauna chavaria
Aratinga wagleri
Psittacula conspicillata conspicillata
Brotogeris jugularis
Amazona amazonica
Amazona ochrocephala panamensis
Uropsalis lyra
Glaucis hirsuta affinis
Lepidopyga cœlina
Chrysolampis elatus
Pteroglossus torquatus nuchalis
Galbula ruficauda ruficauda
?Jacamerops grandis (= anna?)
Nonnula frontalis
Chrysoptilus punctigula striatigularis
Melanerpes rubricapillus rubricapillus
Ceophlœus lineatus mesorhynchus
Conopophaga castaneiceps
Myrmeciza longipes boucardi
Formicarius analis saturatus
Synallaxis albescens albigularis
?Automolus pallidigularis pallidigularis
Xiphorhynchus nanus nanus
Campylorhamphus trochilirostris venezuelensis
Fluvicola pica
?Euscarthmus septentrionalis
Atalotriccus pilaris pilaris
Inezia caudata intermedia
Pipramorpha oleagina parca
Phæomyias murina incompta
?Microtriccus brunneicapillus brunneicapillus
Myiozetetes similis columbianus
Pitangus sulphuratus rufipennis
“ lictor
Myiodynastes maculatus nobilis
Myiobius fasciatus fasciatus
Myiarchus ferox panamensis
Tyrannus melancholichus satrapa
Pipra erythrocephala erythrocephala
Machaeropterus striolatus
Manacus manacus abditivus [1]
Iridoprocne albiventris
Progne chalybea chalybea
?Mimus gilvus columbianus
Donacobius atricapillus albovittatus
Planesticus ignobilis ignobilis
“ albiventer ephippialis
Cyclarhis flavipectus canticus
Geothlypis æquatorialis
Pachysylvia flavipes flavipes
Sporophila grisea grisea
“ minuta minuta
Tiaris olivacea pusilla
“ bicolor omissa
Saltator striatipectus striatipectus
Arremonops conirostris conirostris [2]
Emberizoides sphenurus
Tanagra olivacea humilis
“ crassirostris crassirostris
Thraupis palmarum melanoptera
Ramphocelus dimidiatus dimidiatus
Eucometis cristata cristata
Hemithraupis guira guirina
Schistochlamys atra
Ostinops decumanus
Icterus xanthornus xanthornus

List of Species and Subspecies Known only from the Cauca Valley.

Ortalis columbianus caucæ
Chamæpelia rufipennis caucæ
Psittacula conspicillata caucæ [3]
Stenopsis cayennensis monticola
Synallaxis pudica caucæ
Camptostoma caucæ
Pitangus sulphuratus caucæ
Planesticus ignobilis goodfellowi [3]
Vireosylva chivi caucæ
Cyanocompsa cyanea caucæ [3]
Ammodramus savannarum caucæ
Cœreba mexicana caucæ
Ramphocelus flammigerus

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[1] Represented in western Ecuador by *M. m. melanochlamys* and in southwestern Colombia by *M. m. bangsi*, but unknown on Pacific coast north of Patia River.

[2] Represented in western Ecuador by *A. c. chrysoma*, but unknown on Pacific coast north of Patia River.

[3] Occurs also in the arid upper Dagua Valley.

List of Species and Subspecies of the Colombian-Pacific Fauna which have entered the Cauca Valley.

Leptotila plumbeiceps [1]
Marila nationi [2]
Micrastur guerilla interstes [3]
Rupornis magnirostris ruficauda [3]
Piaya rutila gracilis [3]
Piaya cayana nigricrissa [3]
Ceophlœus lineatus mesorhynchus [3]
Taraba transandeana transandeana [3]
Myrmopagis schisticolor schisticolor [3]
Xenops genibarbis littoralis [3]
Rhynchocyclus sulphurescens asemus [3]
Myiopagis viridicata accola [3]
Myiobius barbatus atricaudus [3]
Myiarchus tuberculifer nigriceps [3]
Manacus vitellinus vitellinus [4]
Tanagra xanthogastra chocoensis [3]
Tanagra saturata [1]
Ramphocelus flammigerus [1]

List of Species and Subspecies Collected in the arid Upper Dagua Basin on the western slope of the Western Andes, showing how large a proportion of them has been derived from the Cauca Valley.

Colinus cristatus leucotis [5]
Chæmepelia passerina nana [5]
Leptotila plumbeiceps [6]
Belonopterus cayennensis [5]
Psittacula conspicillata caucæ [5]
Saucerottea saucerottei [6]
Hylocharis grayi [5]
Chlorostilbon melanorhynchus [6]
Tapera nævia [5]
Crotophaga ani [5]
Synallaxis albescens albigularis [5]
Todirostrum cinereum cinereum [6]
Myiopagis viridicata accola [6]
Myiobius fasciatus fasciatus
Pyrocephalus rubineus heterurus [6]
Sayornis nigricans cineracea [7]
Myiarchus apicalis [5]
Muscivora tyrannus [5]
Troglodytes musculus striatulus [6]
Mimus gilvus tolimensis
Planesticus ignobilis [5]
Compsothlypis pitiayumi elegans [6]
Geothlypis semiflava [6]
Cyanocompsa cyanea caucæ [5]
Sporophila grisea grisea [5]
    “   minuta minuta [5]
    “   gutturalis [6]
Tiaris olivacea pusilla [6]
Saltator striatipectus striatipectus [5]
Tanagra cyanocephala cyanocephala
    “   saturata [6]
Tangara vitriolina [5]
Ramphocelus dimidiatus dimidiatus [6]
    “   chrysonotus
Tachyphonus luctuosus [6]
Molothrus bonariensis cabanisi [5]

The Caribbean Fauna.— The Caribbean coast of Colombia (except for a small section of the base of the central part of the Santa Marta group) from the mouth of the Sinu River to the end of the Goajira Peninsula is arid. Farther east the arid coastal strip extends into Venezuela but I have not at hand exact data from which to determine its eastern limits.

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[1] Unknown east of the Andes.

[2] Known, elsewhere only from the vicinity of Lima, Peru.

[3] Represented east of the Andes.

[4] This species appears to be the only Tropical Zone species of the Pacific coast which has entered the Cauca Valley over the Western Andes. A representative, but strongly marked form, *Manacus vitellinus milleri*, occurs on the lower Cauca River at Puerto Valdivia, on the route by which this species might have been expected to enter the Cauca Valley.

[5] Recorded from the Cauca Valley but not from the Pacific coast.

[6] Recorded from Pacific coast and Cauca Valley.

[7] Recorded from Pacific coast but not from Cauca Valley.

In Colombia, in addition to the coastal district, this arid area occupies the valleys lying between the Santa Marta groups and the Eastern Andes and extends southward up the Magdalena Valley to the northern limits of the forested, humid Cauca-Magdalena Fauna at approximately the junction of the rivers from which this fauna takes its name.

In those parts of this region with which we are familiar, the rainfall is said to be small and irregular. In consequence there are no forests, the open savannas supporting a scanty growth of acacias, mimosas, occasional cacti and other xerophytic forms.

In the vicinity of rivers, marshes and bayous afford a home for numerous aquatic and palustrine forms, and near the coast there are vast expanses of red mangroves bordering the bodies of tidal water. These might indeed be set aside as constituting a small but distinct faunal area. We have, however, done no collecting in them and I am unable to treat of their fauna, but as a rule, aside from water birds, such regions contain few characteristic species.

In addition to such widely distributed scrub and savanna-inhabiting species as *Pyrocephalus r. heterurus, Muscivora tyrannus, Saltator olivascens, Thraupis cana cana*, etc., all of which appear to be of eastern origin, this arid district possesses enough forms of its own to warrant, in my opinion, its being distinguished as a distinct faunal area, for which the name Caribbean seems appropriate.

Some of the characteristic species of the Caribbean Fauna have crossed the forests of the Magdalena and reached the arid upper Magdalena Valley. Examples are *Colinus cristatus, Brotogeris jugularis, Furnarius agnatus, Heleodytes m. bicolor* and *H. brevirostris*, but such distinctive species as *Psittacula spengeli, Picumnus cinnamomeus*, and *Synallaxis candei* do not appear to be known beyond the confines of the Caribbean Fauna.

List of Species and Subspecies which Characterize the Caribbœan Fauna.

Ortalis garrula [1]
Colinus cristatus decoratus
Chæmepelia passerina albivitta
Chlorostilbon hæberlini
Aratinga æruginosa æruginosa
Psittacula spengeli
?Brotogeris jugularis
Galbula ruficauda pallens
Hypnelus ruficollis ruficollis
Chloronerpes xanthochlorus
Chrysoptilus punctigula ujhelyi
Picumnus cinnamomeus

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[1] Recorded only from the Santa Marta district.

Thamnophilus canadensis pulchellus
Microrhopias grisea intermedia
Furnarius agnatus
Synallaxis cinnamomea fuscifrons
" candei candei
Empidochanes cabanisi
Heleodytes minor bicolor
Heleodytes nuchalis nuchalis
" zonatus brevirostris
Troglodytes musculus atopus
Mimus gilvus columbianus
Thraupis glaucocolpa
Cœreba luteola luteola

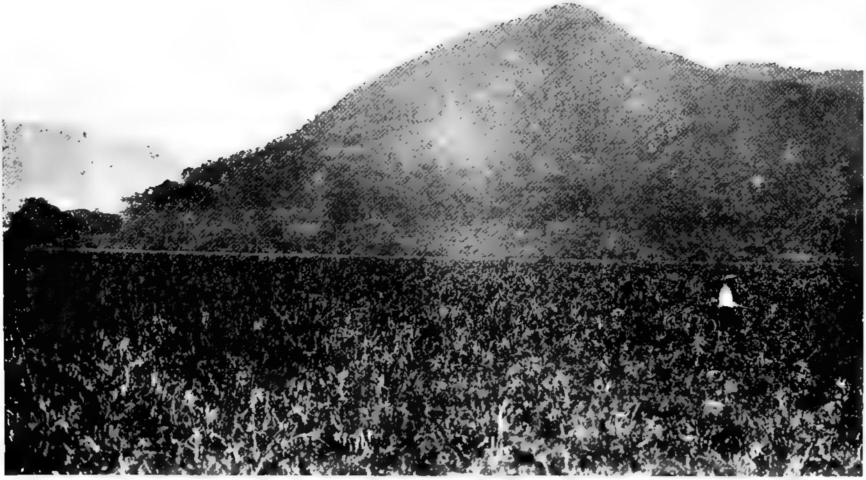
The Orinocan Fauna. — In our work at Buena Vista and Villavicencio, as well as at Florencia and La Morelia, we merely touched the western margin of a major faunal region which reaches to the eastern border of the continent. To define its minor divisions, even were data at hand, would take us far beyond the limits of our subject. It will, however, answer our present purpose to apply, at least provisionally, the term Orinocan Fauna to that part of this region with which we are concerned and restrict our comparison of its life to that of the contiguous areas here under review.

As has been stated elsewhere (see Expedition No. 7), the llanos or plains of the Meta, at Villavicencio, come directly to the base of the Andes. They bear no large forested areas, but the banks of streams are sometimes wooded, and where the streams overflow there are usually patches of forest growth. But the slopes of the outermost ridge of the Andes are heavily forested from base to summit.

Our collecting about Villavicencio, was done in the open fields and in the strips of woodland. At Buena Vista, some 3000 feet higher, we collected only in the forests and about their borders. Nevertheless there was a surprising similarity in the arboreal tropical bird-life of these apparently quite different localities. Thus, of one hundred and fifty species (chiefly Passeres), forty-eight were found only at Buena Vista, fifty-eight only at Villavicencio, while fifty were common to both places.

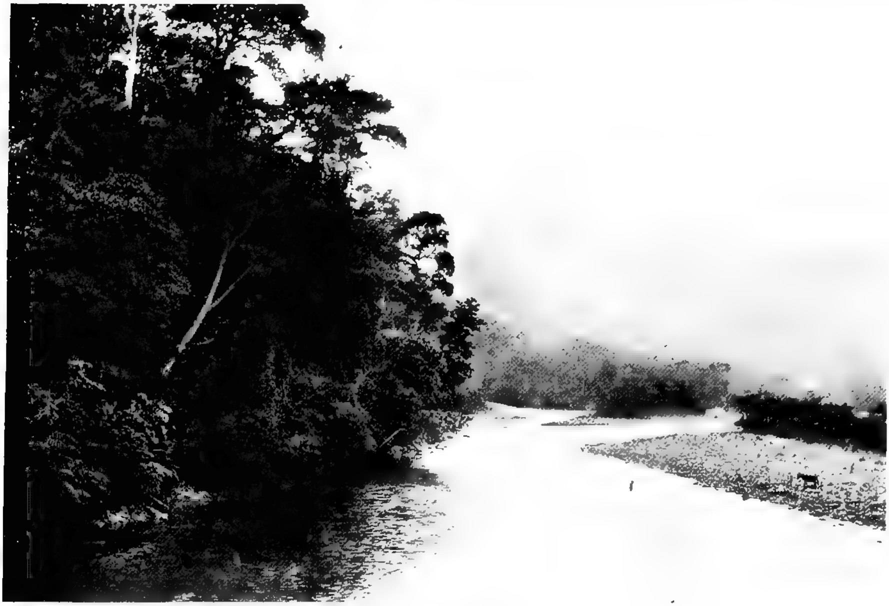
The Amazonian element is apparently quite as strongly shown at Villavicencio as at Buena Vista; twenty-three Amazonian forms collected by Miller at La Morelia and Florencia, being also taken about Villavicencio, and eighteen at Buena Vista. It seems obvious, therefore, that the life of these two localities as it is represented in our collections, may be treated collectively.

Compared with that of the Amazonian Fauna of southeastern Colombia, it contains a much smaller number of pure Amazonian forms, and much larger number of wide-ranging species characteristic of the arid and semi-arid portions of northern South America. There are also several so-called Guianan species which have not as yet been recorded from upper Amazonia. Indicating doubtless a lower humidity, several species common to both the Florencia and Villavicencio districts are represented at the last-named



NEAR VILLAVICENCIO

Junction of Llanos with Andes.
(Tropical Zone; Orinocan Fauna.)



NEAR VILLAVICENCIO

Exit of Rio Guatequia from the Andes.
(Tropical Zone; Orinocan Fauna.)

locality by paler forms. Examples are: *Crypturus soui soui, Leptotila rufaxilla pallidipectus, Brachygalba fulviventris fulviventris* and *Synallaxis mœsta mœsta.*

List of Species and Subspecies found at Villavicencio and Buena Vista which have not been Recorded from the Amazonian Fauna of Colombia or from eastern Ecuador and which, therefore, Characterize the westward extension of the Orinocan Fauna.

Crypturus soui soui
Crax alector
Colinus cristatus parvicristatus
Columba rufina
Leptotila rufaxilla pallidipectus
Stenopsis cayennensis cayennensis
Brachygalba fulviventris fulviventris
Chelidoptera tenebrosa
Veniliornis fidelis
Thamnophilus doliatus doliatus
“ tenuipunctatus
Ramphocænus melanurus trinitatis
Cercomacra tyrannina tyrannina
Grallaria modesta
Synallaxis mœsta mœsta
“ gujanensis columbianus
Automolus turdinus
Sclerurus albigularis albigularis
Glyphorhynchus cuneatus
Dendroplex picus picus
Picolaptes albolineatus
Campylorhamphus trochilirostris venezuelensis
Machetornis rixosa flavigularis
Todirostrum superciliare superciliare
Leptopogon superciliaris poliocephalus
“ amaurocephalus
Phæomyias murina incomta
Myiozetetes granadensis
Pachyrhamphus cinnamomeus
Thryophilus albipectus bogotensis
“ rufalbus cumanensis
Pheugopedius hypospodius
Troglodytes musculus neglectus
Pachysylvia flavipes flavipes
Geothlypis æquinoctialis
Oryzoborus angolensis
“ crassirostris crassirostris
Sporophila grisea grisea
Myiospiza cherriei
Arremonops conirostris conirostris
Arremon axillaris
Cœreba luteola luteola
Tanagra aurea pileata
Tangara vitriolina
Thraupis episcopus leucoptera
Ramphocelus carbo unicolor
Icterus xanthornus xanthornus

Amazonian Fauna.— When we enter that vast territory lying east of the Andean system, we leave behind us the more distinctive features of the Colombian fauna. We stand now, as it were, on the shores of a great ocean of life which stretches far beyond the boundaries of Colombia. No adequate analysis of its affinities can be based on the study of a restricted part of it. The problem is as wide as the combined Amazonian and Orinocan basins. It should, therefore, be understood that in applying the term Amazonian Fauna to that portion of tropical Colombia included in the Amazonian drainage system, it is not intended to imply that we have here a definite faunal area, but that the faunal affinities of this southeastern section of the republic are with that wide-spreading region to which the name Amazonia is commonly, if somewhat vaguely, applied.

So far as I am aware, no attempt to map the faunal areas of Amazonia has as yet been made, but it is evident that in spite of its enormous extent the comparatively uniform climatic and topographic conditions which prevail throughout its forested portions have produced correspondingly uniform faunal characteristics.

Such small, sedentary species as, for example, *Dichrozona* and *Rhopoterpe* range, unchanged from the base of the Andes through two thousand miles of forest to the lower Amazon, and the local differences in flora occasioned by the wide variations between low and high water on the larger streams are often more pronounced than those existing in districts at opposite borders of the region.

The distinctive feature of Amazonia is its forests, so well described by Wallace, Bates, Spruce and others. As elsewhere remarked, the northern limit of this Amazonian forest coincides approximately with the Guaviare River, beyond which lie the Llanos, but a heavily forested belt extends much farther north along the lower slopes of the Andes. According to Rice, as already quoted, the Sierra Chiribiquete lying south of the Guaviare, reaches an altitude of 2850 feet. Judging by our work at Buena Vista (alt. 4500 ft.), on the outermost spur of the Eastern Andes above Villavicencio, this is not sufficient altitude to produce a marked change in fauna. It remains, however, to be discovered to what extent the apparent isolation of these mountains and the possibly different environmental conditions they may offer, has modified the forms inhabiting them.

As might be expected, there is a close resemblance between the bird-life of Amazonian Colombia, as it is revealed by Miller's work at La Morelia and Florencia, and that of eastern Ecuador as that has been made known by the so-called 'Napo' specimens.

It goes without saying that notwithstanding the large collections secured by him in a limited time, Miller's month at La Morelia and Florencia enabled him to get only enough material to show the faunal features of the region, and their Amazonian character is indicated by the appended list of, distributionally, the more significant species.

List of the More Characteristic Amazonian Species collected at Florencia and La Morelia, in Southeastern Colombia.

Penelope jacqúaçu
Ortalis guttata
Pipile cumanensis
Opisthocomus hoazin
Anurolimnas castaneiceps
" hauxwelli
Creciscus ænops
Psophia napensis
Otus watsoni
Psittacula sclateri
Electron platyrhynchus pyrrholæmus
Hydropsalis climacocerca

Phœthornis fraterculus moorei
Eutoxeres condamini
Campylopterus obscurus æquatorialis
Agyrtrina fluviatilis
Pharomacrus pavoninus
Trogonurus bolivianus
Chrysotrogon ramonianus
Curucujus melanurus melanurus
Capito aurovirens
    “ auratus auratus
Ramphastos cuvieri
Pteroglossus pluricinctus
    “ castanotis castanotis
    “ flavirostris flavirostris
    “ humboldti
Selinidera reinwardti
Galbula tombacea tombacea
Bucco capensis
Argicus macrodactylus
Malacoptila fusca
Monasa flavirostris
    “ morphœus peruana
    “ nigrifrons
Veniliornis ruficeps hæmatostigma
Campephilus melanoleucus
Dysithamnus capitalis capitalis
    “ ardesiacus ardesiacus
Cercomacra sclateri
Rhopoterpe torquata
Dichrozona cincta
Myrmeciza melanoceps
Hypocnemis cantator peruviana
    “ hypoxantha
Hylophylax lepidonota
    “ nævia theresæ
Synallaxis rutila caquetensis
Automolus infuscatus infuscatus
Philydor ruficaudatus
Ancistrops strigilatus
Sclerurus brunneus
Xiphorhynchus guttatoides
    “ insignis
Dendrocolaptes sancti-thomæ radiolatus
Ochthornis littoralis
Todirostrum latirostris
Lophotriccus spicifer
Pipra coronata
Cirrhopipra fulicauda
Machæropterus striolatus
Chiroxiphia pareola napensis
Lathria cinerea
Lipaugus simplex
Cephalopterus ornatus
Myospiza aurifrons
Paroaria gularis
Tanagra chilensis
    “ schranki
    “ xanthogastra
Ramphocelus nigrogularis
Cissopis liveriana minor
Gymnostinops yucares

THE SUBTROPICAL ZONE AND ITS FAUNAS.

The Subtropical Zone lies approximately between the altitudes of 5000 and 9000 feet, or from the average upper limits of the Tropical Zone to the lower limits of the Temperate Zone. Its inferior boundary is consequently as variable as the superior boundary of the Tropical Zone, and hence may vary from 4500 to 6500 feet in accordance with the conditions mentioned in outlining that zone. The altitude at which it meets the Temperate Zone is also governed by humidity. Apparently, however, it never exceeds 9500 feet, but in the absence of the forest which distinguishes the Subtropical Zone it descends to the level at which forest is encountered. Should the forest be entirely wanting, the zone, so far as birds are concerned, is also missing or but suggested by the occurrence of the few scrub-haunting species like *Xanthoura,* which are found in it. With them will be associated

both Tropical Zone and even Temperate Zone species whose habits fit them to life in more or less open, bushy places. Such an association was found at Quetame (alt. 4500 ft.) in the Eastern Andes, where in the scanty growth of low trees bordering the Rio Negro and its tributaries we found *Xanthoura yncas cyanodorsalis*, *Schistochlamys atra* and *Thraupis episcopus leucoptera*, while in the immediately adjoining fields was *Sturnella magna meridionalis*, and in bordering hedgerows, *Semimerula gigas gigas* and *Brachyspiza capensis peruviana*.

Usually, however, the Subtropical Zone is as clearly defined as the conditions to which it owes its characteristic features. It is pre-ëminently a zone of forests, the product of the heavy rainfall and high degree of humidity prevailing at the altitude in which the Subtropical Zone is found.

In the field, we termed it the 'Cloud Zone,' so closely does its lower border coincide with the height to which clouds descend on the mountain-sides. This term, however, may be also applied to the two upper zones, Temperate and Paramo, though cloud forests exist only in the Subtropical and Temperate Zones, the temperature of the Paramo Zone being evidently too low to permit of forest growth. Furthermore, the rainfall decreases as the altitude increases.

The forests of the Subtropical Zone, particularly on windward slopes, present a luxuriance of growth not equalled even in the Tropical Zone. The lower zone produces nobler, taller trees (we saw nothing in the subtropics to approach the ceibas of the basal zone), but in profusion of undergrowth, of parasites and epiphytes which thrive in this region of clouds, the Subtropical Zone excels. It is the zone in which we found tree ferns attaining their maximum height of approximately fifty feet, in which a climbing bamboo grows in impenetrable tangles, in which orchids, bromelias and plants of similar habit occupy every available point of vantage, clustering thickly on the limbs and even trunks of trees; while every spot not occupied by some other form of plant-life, is cushioned with moss. From each leaf and limb water is constantly dripping, the bromelias are usually full to overflowing, the moss is like a saturated sponge. Even when, at intervals, the sun penetrates the clouds, the falling drops suggest a shower.

In view of the altitude attained by the Subtropical Zone, far higher mountains are required to act as effective barriers to its extension across the ranges on the slopes of which it lies. This fact, in connection with the exceptional continuity of the Subtropical Zone forests, gives to the life of this zone a uniformity which, when one considers its length and the distance which its arms are sometimes separated, is surprising.

Latitudinally, the Subtropical Zone extends from central Venezuela and Mexico at the north southward through Colombia to western Ecuador

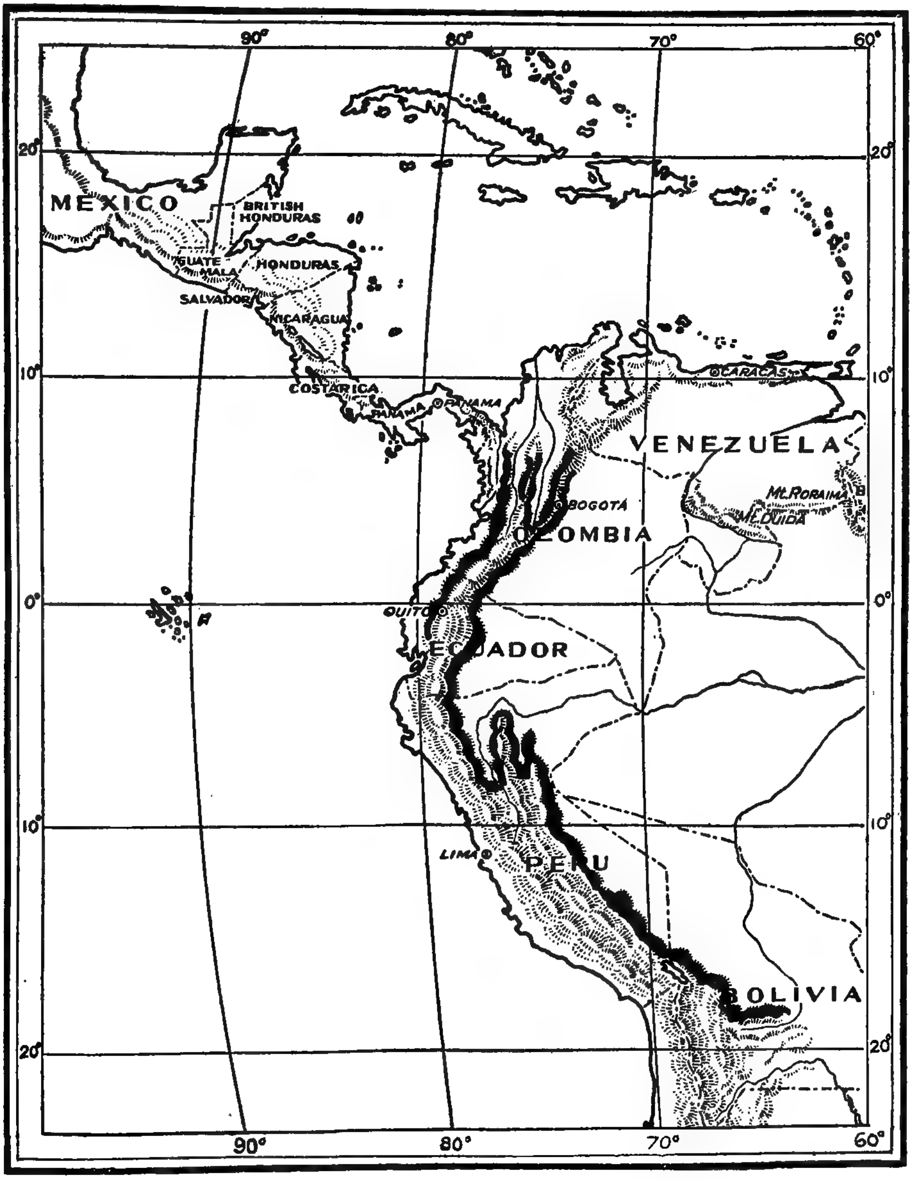

90°
80°
70°
60°
20°
10°
0°
10°
20°
MEXICO
BRITISH HONDURAS
GUATEMALA
HONDURAS
SALVADOR
NICARAGUA
COSTA RICA
PANAMA
PANAMA
CARACAS
VENEZUELA
Mt. RORAIMA
Mt. DUIDA
BOGOTA
COLOMBIA
QUITO
ECUADOR
LIMA
PERU
BOLIVIA

Fig. 15. Distribution of the *Cock-of-the Rock*. A Subtropical Zone species represented in the West Andean Subtropical Fauna by one form (*Rupicola peruviana sanguinolenta*), and in the Central and Eastern Andes by a closely related but distinct species (*R. peruviana aurea*), the ranges of which are separated by the Temperate Zone of the higher intervening mountains.

on the Pacific slope of the Andes, and, on the Atlantic slope, to eastern Bolivia, where Miller and Boyle found its southern end between the Yungas of Cochabamba and the mountains above Santa Cruz.

Throughout approximately 2500 miles of its length, that is, from Venezuela to Bolivia, the bird-life of this zone is so remarkably uniform in character that, as with the Amazonian and Orinocan elements in the Colombia fauna, one cannot arbitrarily segregate any part of it and study it satisfactorily to the exclusion of the rest.

Our field work is now chiefly directed toward the acquisition of adequate collections of the birds and mammals of this exceptionally interesting zone of life, and until our work is completed, it will be impossible to speak of the zone as a whole or of its altitudinal boundaries outside of Colombia. A study of the northward extension of the Subtropical Zone into Costa Rica reveals what may be termed a 'zoological fault' in Panama, while a comparison of the Costa Rican representatives of Colombian species with those recorded from the Santa Marta group gives some significant results which will be presented later.

Data are unfortunately lacking for a satisfactory comparison of the Subtropical Zone bird-life of the Andes with that of the mountains of southern Venezuela, the Guianas, and southeastern Brazil.

The birds of the Subtropical Zone, as might be expected, are almost exclusively forest-dwellers; the Green Jay (*Xanthoura*) is found about forest-borders and is one of the few Subtropical species inhabiting semi-arid places. The Dipper (*Cinclus*) and Torrent Duck (*Merganetta*), while confined to mountain streams, do not require that the shores be forested. But exceptions of this kind are rare. Tanagers are the most numerous in species as well as in individuals, the family Tanagridæ being the only one which, in Colombia, has more species in the Subtropical Zone than in the Tropical Zone. The Thrushes, while far less numerous in species, have almost as large a proportionate representation. Guans, Trogons, Capitos, Toucans, Dendrocolaptids, Cotingas and Wrens are all characteristic of the Subtropical Zone and, in the Colombian Andes, have about half as many species in it as in the Tropical Zone. The Flycatchers are about one-half as numerous in the subtropics as in the tropics. Families of forest-inhabiting Tropical Zone birds which have a comparatively poor representation in the Subtropical Zone[1] are the Pigeons, Parrots, Woodpeckers and Orioles, of which there are about four times as many species in the tropics as in the subtropics, and Formicarians, of which we found only seventeen

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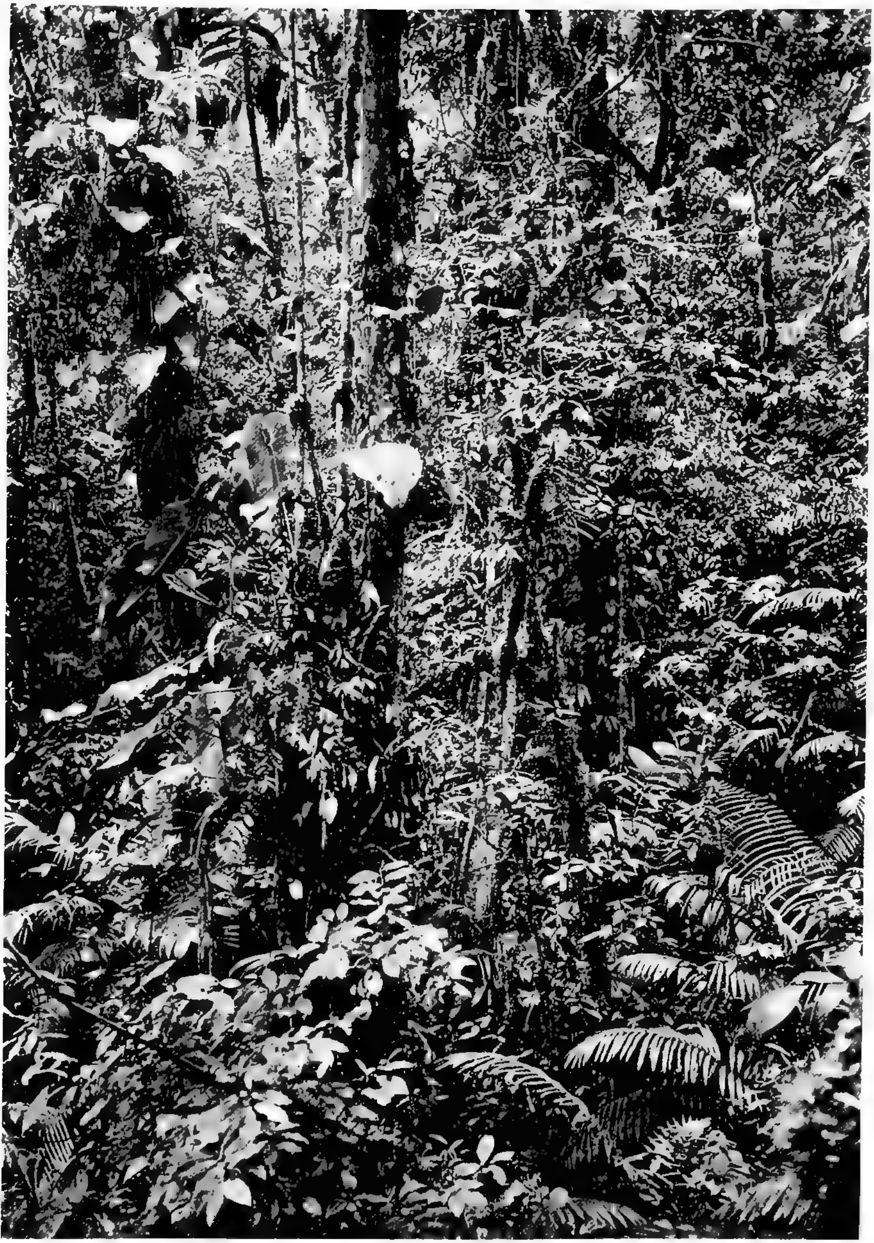
[1] It should be understood that these statements refer only to the results obtained by us in the Colombian Andes.



SUBTROPICAL FOREST

Characteristic scene in the forest at San Antonio, summit of the Western Andes. Note the profusion of parasitic growth.

(Subtropical Zone; West Andean Fauna.)

species in the subtropics as compared with eighty-two in the tropics. Many species of this last-named group, it is true, are scrub haunters, nevertheless, their abundance in heavy tropical forests is shown by the fact that Miller secured twenty-four species in the Amazonian Fauna in a month's collecting.

As might be expected, few true Finches inhabit the Subtropical Zone, but the Tanager-Finches of the genus *Atlapetes* are almost restricted to it. The Bucconidæ are represented by the only one of the eighteen tropical species which ranges upward to the subtropics; the Motmots by but one, while the Galbulidæ appear to be wholly absent.

Satisfactory data are wanting for a study of the origin of the bird-life of the Subtropical Zone. Our work in Colombia merely touched a portion of the vast area in which field studies and carefully labeled collections must be made before one can treat of the zone as a whole, and, as before stated, its life is too uniform to permit of conclusions being based on the study of a part.

It appears, however, that so far as birds are concerned, the Tropical Zone differs from the Temperate and Paramo Zones in two important respects — one of which is the corollary of the other. First, the Subtropical Zone, latitudinally, does not extend beyond the limits of the Tropical Zone with which, when altitude permits, from Bolivia to Mexico, it is practically coterminous. Second, the Subtropical Zone, as a faunal area, does not descend to sea-level. Consequently it follows that the Subtropical Zone is always an altitudinal zone, and it also follows that its life, as a whole, was derived from the tropics.

To what extent the altitude of the Subtropical Zone is affected by latitude, I am not as yet prepared to say. *Brachyspiza capensis peruviana*, a species of the Subtropical and Temperate Zones, is found at sea-level on the Island of Curaçao. It descends the Rio Negro east of Bogotá to Quetame (alt. 4500 ft.) but was wanting at Buena Vista. It, however, occurs at Caicara on the Orinoco. This species is really most characteristic of the Temperate Zone, but is also common in the arid subtropics. Its further descent to the Tropical Zone forms, therefore, an exception to the rule that the life of any zone is derived from a lower level.

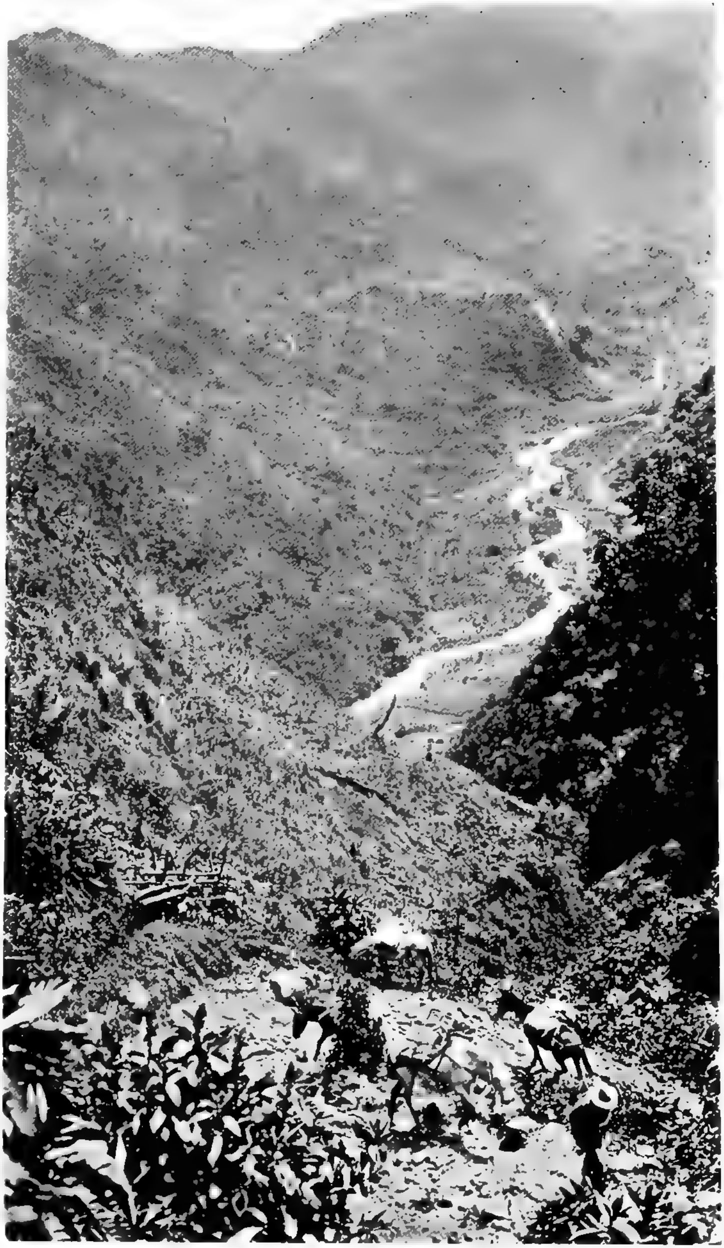
Assuming that species found in all three ranges must have had a common point of origin south of the latitude where these ranges leave the Ecuadorian Andes, it is interesting to ascertain the results following their isolation. In most instances when there is appreciable racial variation, two races develop, one of which is found in the East Andean Fauna, the other in the West Andean Fauna. Where only one race is evolved it is generally found in the East Andean Fauna, while the West Andean form resembles that inhabiting western Ecuador. In some few instances the form of each range is alike, all consequently differing from the Ecuadorian form in the same manner; indicating, therefore, that their characters have arisen independently and hence by parallelism. Examples are *Ocreatus underwoodi underwoodi* and *Boissoneaua flavescens flavescens.*

Usually, however, specific cases of variation in altitudinal distribution show a tropical species ascending to the subtropics rather than the reverse. Thus, *Leptotila verreauxi verreauxi* is a form of the Tropical Zone in the Magdalena Valley and eastward, but *L. v. occidentalis* in the Cauca region is found in the Subtropical Zone. *Columba subvinacea berlepschi* of the tropics also grades into *C. s. bogotensis* of the subtropics. *Lophotriccus squiamæcrista squamæcrista* inhabits the Subtropical Zone in all three ranges of the Colombian Andes, but in southwestern Colombia and western Ecuador *L. s. minor* is found at sea-level. *Thryophilus nigricapillus connectens* is a subtropical form of the tropical *T. n. schotti; Cacicus uropygialis uropygialis* is a subtropical form of *C. n. pacificus.* These are all intergrading forms and as such evidently illustrate how subtropical species are derived from tropical species. The inosculation of the upper limits of the Tropical Zone with the lower limits of the Subtropical Zone make it difficult to understand how, under existing conditions, these intergrading, representative forms could become specifically separated. When, however, we attempt to explain the origin of the numerous wholly distinct species and genera now restricted to the Subtropical Zone we must take into consideration the profound climatic changes caused by elevation of the Andes, and by subsequent periods of glaciation which have produced wide fluctuations in zonal levels. We must also consider points of origin and subsequent zonal dispersion followed by complete geographic segregation from the parent form.

For example, the basal, or tropical ancestor of *Rupicola peruviana* is possibly *Rupicola rupicola;* but the former has extended its range through the Subtropical Zone to Bolivia, while the latter is restricted to the Guianan region. Again, *Pyroderus scutatus granadensis* is now found in the Tropical Zone of the Eastern Andes of Colombia, but *P. s. scutatus,* the probable parent form, is found only in southeastern Brazil and eastern Paraguay.

But until we have a far more detailed knowledge of the geological history of the Andes and especially of the extent to which these mountains have been glaciated, we shall not be in a position to discuss satisfactorily the origin of its Subtropical Zone life. Meanwhile, as an ornithologist, I present further data in regard to its Colombian elements.

The sharply defined topography of the Andean system in Colombia gives an equally clear definition to the zones of subtropical life which lie on its slopes. In all three Andean ranges, north of Popayan, they are widely separated below by Tropical Zone slopes and valleys, except at the



HEART OF THE CENTRAL ANDES

View of the Rio Toché from above El Pie de San Juan. Torrent Ducks and Dippers were common on this stream.

(Subtropical Zone; East Andean Fauna.)

northern ends of the Western and Central Andes. In the Central Andes the Subtropical Zone of the western slope is prevented from coming in contact with the same zone on the eastern slope by the Temperate Zone until the northern end of the range is reached in Antioquia. In the Eastern Andes the zones of eastern and western slopes doubtless also meet where decreasing altitude near the northern end of the range permits them to cross the divide, and Miller's work in the southern part of this range shows that the pass at Andalucia (alt. 7000 ft.) is in the heart of the Subtropical Zone which here, as in the greater part of the Western Andes, occupies both slopes and the crest of the range.

Notwithstanding these, chiefly terminal, connections it is evident that the three branches of the Subtropical Zone in Colombia are sufficiently isolated from one another to become centers of local, adaptive radiation. The life of the Subtropical Zone as a whole, however, is remarkably uniform, more than half of its characteristic species being distributed throughout its greater part.

Thus of the 230 distinctively Subtropical Zone species found by us in Colombia, 121 are present either as unchanged or intergrading forms in all three Andean ranges. The remaining 109 species may be distributionally classified as follows:

Peculiar to the Western Andes	31 species
" " " Central "	9 "
" " " Eastern "	22 "
Common to the Western and Central Andes[1]	14 "
" " " Eastern and Central Andes[2]	33 "

The facts expressed by this analysis appear to require the recognition of at least two subdivisions of the Subtropical Zone of the Colombian Andes which I suggest be known as:

1. The West Andean Subtropical Fauna.
2. The East Andean Subtropical Fauna.

Before treating of these minor divisions of the Subtropical Zone it seems desirable to give a list of the species we collected in it.

Birds of the Subtropical Zone.

Family *Tinamidæ*

Tinamus tao
Nothocercus bonapartei
" intercedens (*vide* Hellmayr)

Family *Cracidæ*

Penelope cristata
" perspicax
Aburria aburri

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[1] Chiefly the western slope.
[2] Chiefly the eastern slope.

Chamæpetes goudoti goudoti [1]

Family *Odontophoridæ*

Odontophorus hyperythrus
“ strophium

Family *Columbidæ*

Columba albilinea albilinea [3]
“ subvinacea bogotensis
Leptotila verreauxi occidentalis
Oreopeleia montana
“ bourcieri
“ linearis linearis

Family *Anatidæ*

Merganetta columbiana

Family *Bubonidæ*

Glaucidium jardini

Family *Psittacidæ*

Ognorhynchus icterotis
Pyrrhura calliptera
“ souancei
Amazona mercenaria
Pionus chalcopterus
Hapalopsittaca amazonina

Family *Momotidæ*

Momotus æquatorialis æquatorialis

Family *Caprimulgidæ*

Lurocalis rufiventris
Stenopsis ruficervix [1]

Family *Trochilidæ*

Doryfera ludoviciæ ludoviciæ
Phœthornis guyi emiliæ
“ syrmatophorus syrmatophorus
“ syrmatophorus columbianus
Campylopterus falcatus
Agyrtria viridiceps
Uranomitra franciæ
Thalurania colombica colombica
“ fannyi verticeps
Colibri cyanotus
“ iolata
Simonula berlepschi
Phaiolaima rubinoides rubinoides
“ “ æquatorialis
Heliodoxa leadbeateri
Helianthea torquata [1]
“ cœligena columbiana
“ “ ferruginea
Lafresnayea lafresnayei [1]
Ensifera ensifera ensifera [1]
Boissoneaua flavescens [1]
Vestipedes aureliæ aureliæ
“ “ caucensis
Ocreatus underwoodi underwoodi
Urosticte benjamini benjamini
Adelomyia melanogenys melanogenys
“ “ cervina [1]
Heliangelus exortis [1]
Cyanolesbia kingi kingi
“ mocoa mocoa
“ emmæ
“ cœlestes
Schistes geoffroyi
“ albogularis
Chætocercus mulsanti
“ heliodor
Klais guimeti

Family *Trogonidæ*

Pharomacrus antisiensis
“ auriceps
Trogon personatus
Trogonurus collaris

Family *Capitonidæ*

Eubucco richardsoni granadensis
“ bourcieri bourcieri
“ “ occidentalis
Semnornis ramphastinus

Family *Ramphastidæ*

Ramphastos ambiguus ambiguus
Andigena nigrirostris nigrirostris
“ “ spilorhynchus
“ “ occidentalis
Aulacorhynchus albivitta albivitta
“ “ phæolæmus
“ “ griseigularis
“ hæmatopygius

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[1] **Ranging upward to the Temperate Zone.**

Family *Bucconidæ*

Malacoptila mystacalis

Family *Picidæ*

Chloronerpes rubiginosus gularis
“ “ buenavistæ
Melanerpes flavigula
Veniliornis oleaginus fumigatus
“ “ aureus
“ dignus
Campephilus pollens [1]

Family *Hylactidæ*

Scytalopus micropterus micropterus

Family *Conopophagidæ*

Conopophaga castaneiceps castaneiceps

Family *Formicariidæ*

Thamnophilus unicolor
“ multistriatus
Dysithamnus semicinereus semicinereus
“ “ extremus [2]
Myrmopagis schisticolor schisticolor
“ “ interior
Drymophila caudata caudata
Terenura callinota
Pyriglena picea
Formicarius rufipectus carrikeri
Chamæza turdina
Grallaria alleni
“ hypoleuca
“ ruficapilla ruficapilla
Grallaricula costaricensis
“ nana
“ cucullata

Family *Dendrocolaptidæ*

Lochmias sororia
Synallaxis azaræ media [1]
“ pudica pudica
“ unirufa [1]
Siptornis antisiensis
“ erythrops griseigularis
“ striaticollis
Pseudocolaptes boissonneauti boissonneauti
Automolus ignobilis
Automolus holostictus
Philydor montanus striaticollis
Thripadectes flammulatus
“ virgaticeps sclateri
Xenicopsis subalaris subalaris
“ “ mentalis
Sclerurus mexicanus obscurior
Margarornis perlata [1]
“ stellata
Premnornis guttata
Xenops rutilus heterurus
Premnoplex brunnescens brunnescens
Dendrocincla tyrannina tyrannina
Xiphorhynchus triangularis
Xiphocolaptes promeropirhynchus [1]
Picolaptes lacrymiger lacrymiger [1]
“ warscewiczi
Campylorhamphus pucherani

Family *Tyrannidæ*

Ochthœca cinnamomeiventris
“ gratiosa [1]
Mecocerculus pœcilocercus
Platytriccus flavigularis
Craspedoprion fulvipectus
Pœcilotriccus ruficeps ruficeps
“ “ rufigene
Euscarthmus granadensis [1]
Pseudotriccus annectens
“ pelzeni pelzeni
Cænotriccus ruficeps ruficeps [1]
Lophotriccus squamæcrista squamæcrista
Hapalocercus acutipennis
Pogonotriccus pœcilotis
“ opthalmicus
Oreotriccus plumbeiceps
Mionectes striaticollis poliocephalus
Leptopogon erythrops
Phyllomyias griseiceps griseiceps
“ “ caucæ
Acrochordopus zeledoni
Tyranniscus nigricapillus nigricapillus [1]
“ cinereiceps [1]
Elænia chiriquensis chiriquensis
Elænia pudica brachyptera
“ “ pudica
Conopias cinchoneti

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[1] Ranging upward to the Temperate Zone.
[2] Found also in the Cauca Valley.

Myiodynastes chrysocephalus minor
Hirundinea sclateri
Myiobius flavicans
“ villosus
“ cinnamomeus pyrrhopterus
“ pulcher pulcher
“ “ bellus
Myiotriccus ornatus ornatus
Empidochanes pœcilurus
Myiochanes ardosiacus ardosiacus
Myiarchus cephalotes

Family *Pipridæ*

Pipra leucocilla minimus
“ “ coracina
“ isidorei isidorei
Chloropipo flavicapilla
Piprites tschudi
Masius chrysopterus
“ corunulatus

Family *Cotingidæ*

Pachyrhamphus versicolor
“ dorsalis
Lathria fuscocinerea fuscocinerea
“ cryptolopha
Attila brasiliensis parambæ
Rupicola peruviana aurea
“ “ sanguinolenta
Stictornis cinctus
Euchlornis riefferi riefferi
“ “ occidentalis
“ lubomirski
“ aureipectus (*vide* Scl.& Salv.)
Heliochera rufaxilla
Pyroderus scutatus granadensis
“ “ occidentalis
Cephalopterus penduliger

Family *Hirundinidæ*

Pygochelidon cyanoleuca

Family *Troglodytidæ*

Cinnicerthia olivascens [1]
Odontorhynchus branicki
Thryophilus nigricapillus connectens
Pheugopedius spadix
“ mystacalis mystacalis
Pheugopedius mystacalis amaurogaster
“ sclateri
Troglodytes solstitialis pallidipectus [1]
Henicorhina prostheleuca eucharis
“ leucophrys guttata
“ “ brunneiceps
Leucolepis dichrous

Family *Cinclidæ*

Cinclus leuconotus

Family *Turdidæ*

Myiadestes ralloides venezuelensis
Planesticus serranus
“ fuscobrunneus
“ leucops
“ caucæ
Catharus birchalli
“ phæopleurus
“ dryas

Family *Vireonidæ*

Vireosylva josephæ josephæ
Pachysylvia semibrunnea
Cyclarhis nigrirostris

Family *Mniotiltidæ*

Myioborus verticalis verticalis
Basileuterus cinereicollis
“ cabanisi
“ tristriatus tristriatus
“ coronatus [1]

Family *Catamblyrhynchidæ*

Catamblyrhynchus diadema [1]

Family *Fringillidæ*

Sporophila luctuosa
Saltator atripennis atripennis
“ “ caniceps
Spinus xanthogaster
Brachyspiza capensis peruviana [1]
Pseudochloris citrina antioquiæ
Lysurus castaneiceps
Atlapetes flaviceps
“ fusco-olivaceus
“ gutturalis gutturalis
“ latinuchus latinuchus

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[1] **Ranging upward to the Temperate Zone.**

Atlapetes latinuchus elæoprorus
" albifrenatus
" crassus
" semirufus
Buarremon brunneinuchus
" atricapillus

Family *Cærebidæ*

Diglossa sittoides similis
" albilateralis [1]
" personata [1]
" cryptorhis
Diglossopis cærulescens cærulescens
Conirostrum albifrons
" atrocyaneum

Family *Tanagridæ*

Chlorophonia pretrei
Tanagra xanthogastra brevirostris
Chlorochrysa calliparæa bourcieri
" phœnicotis
" nitidissima
Pipræidea melanota venezuelensis
Procnopis vassori [1]
Tangara guttata tolimæ
" " bogotensis
" rufigula
" aurulenta aurulenta
" " occidentalis
" icterocephala
" gyroloides gyroloides
" " catharinæ
" " bangsi
" nigroviridis nigroviridis
" cyaneicollis cæruleocephala
" " granadensis
" ruficervix ruficervix
" labradorides
" melanotis
" parzudaki
Tangara venusta
" atricapilla
Iridosornis porphyrocephala
Buthraupis cucullata cucullata [1]
" edwardsi
" melanochlamys
" aureocincta
Compsocoma somptuosa victorini
" " antioquiæ
" " cyanoptera
" notabilis
Dubusia tæmiata [1]
Sporathraupis cyanocephala auricrissa
Calochætes coccineus
Piranga testacea testacea
" rubriceps [1]
Phœnicothraupis cristata
Tachyphonus rufus
Creurgops verticalis
Chlorospingus albitempora nigriceps
" flavipectus
" canigularis
" flavigularis flavigularis
" semifuscus
Hemispingus frontalis oleagineus
" atropileus [1]
" melanotis
Oreothraupis arremonops

Family *Icteridæ*

Ostinops salmoni
" alfredi sincipitalis
" " neglectus
Cacicus uropygialis uropygialis
Icterus giraudi
Hypopyrrhus pyrohypogaster

Family *Corvidæ*

Xanthoura yncas galeatus
" " cyanodorsalis

THE FAUNAS OF THE SUBTROPICAL ZONE.

The West Andean Subtropical Fauna.— The West Andean Subtropical Fauna occupies that part of the Subtropical Zone which extends along the Western Andes from southern Ecuador, or at the northern end of the arid

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[1] Ranging upward to the Temperate Zone.

Peruvian region, northward through Colombia. To it should doubtless be added the subtropical western slope of the Central Andes which, while far from possessing all the forms that characterize the West Andean Subtropical Fauna, has a closer affinity with that fauna than it has with the East Andean Subtropical Fauna. This is indicated by the presence of such distinctive West Andean species as *Geotrygon bourcieri, Formicarius rufipectus carrikeri, Chlorochrysa nitidissima* and *Ostinops salmoni.* Furthermore, with species which have representative races in the West Andean Fauna and the East Andean Fauna, the form of the western slope of the Central Andes usually agrees with that of the Western Andes, that of the eastern slope with that of the Eastern Andes. Taking the Central Andes, as a whole, however, the East Andean Subtropical element is much stronger than that received from the Western Andes, a fact obviously attributable to existing topography and to the humid connection at the head of the Magdalena Valley.

On the Pacific slopes of the Andes this faunal belt stretches continuously from its southern end to northern Colombia. Whether it exists on the summit of the Baudo range unfortunately is not known. It reappears in dilute form on the crests of the higher mountains of eastern Panama and Costa Rica, and its influence extends even to southern Mexico. Its apparent absence between the higher portions of eastern and western Panama has already been mentioned and will be referred to in detail later.

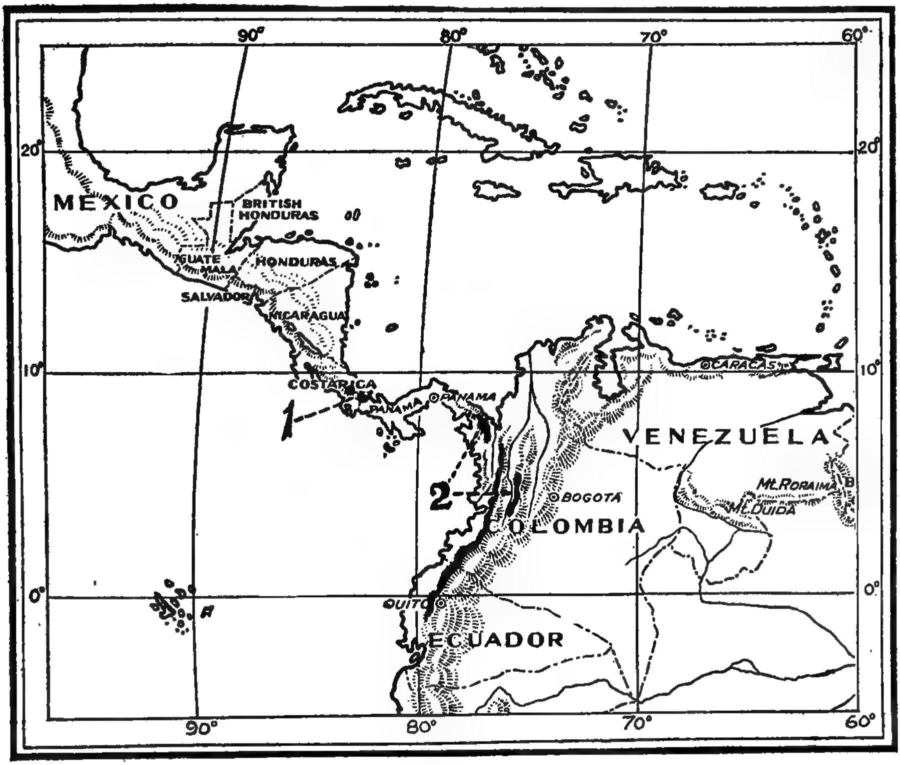
While apparently always present on the western slope of the Western Andes, it is developed on the eastern slope of this range only above an elevation of 6500 feet; the altitude of condensation, as explained in writing of the Tropical Zone, being higher on the eastern than on the western slope of this range.

Its forests stretch, apparently without a break, along the western slopes of the Central Andes above the Cauca Valley, are wanting in southern Antioquia, but reappear in the more northern part of that department. Here the Western and Central Andes are separated only by the Cauca River from opposite banks of which they respectively arise. At this point the subtropical forests of these ranges are within a short distance of one another. Doubtless for this reason forms elsewhere restricted to one range may in some few instances here be found in both. Further south, these ranges are separated by the increasingly wide Cauca Valley until one reaches the 'knot' of Popayan, but although this attains the altitude of the Subtropical Zone it is lacking in the heavy forests which characterize it and the West Andean Subtropical Fauna is, therefore, not connected here with its Central Andean branch, a fact which presumably accounts for the comparatively small number of West Andean forms found in the Central Andes.

The distinguishing characteristics of the West Andean Subtropical

Fauna are those of its zone. It cannot be said to have arid sections. When the humidity falls below the point required to produce the forests which Subtropical Zone species require, the zone practically disappears and its place is taken by an upward extension of the Tropical Zone and a downward extension of the Temperate Zone.

Aside from representative forms of species of general Subtropical distribution in Colombia, we have taken thirty-one species peculiar to the West Andean Fauna, but only twenty-two peculiar to the East Andean Fauna. Nevertheless, as we have seen, the West Andean Fauna occupies a comparatively restricted, isolated area, and at the south, whence it seems evident subtropical life was derived, it is entirely cut off from corresponding areas.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PANAMA
CARACAS
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VENEZUELA
Mt. RORAIMA
Mt. DUIDA
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BOGOTA
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QUITO
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Fig. 16. Distribution of *Formicarius rufipectus*. A species of the West Andean Subtropical Fauna which occurs in eastern Panama, western Panama and Costa Rica but is unknown in the intervening Tropical Zone. It is represented in the Subtropical Zone of eastern Ecuador by *F. thoracicus*.
1. *Formicarius rufipectus rufipectus*. 2. *F. r. carrikeri*.

The East Andean Fauna, however, is but the more northern portion of a belt of forest which extends southward to central Bolivia. Expressed in miles, the West Andean Fauna measures from north to south about 850 miles, the East Andean, with its subdivisions, nearly 2500 miles.

Something more than isolation is required to explain the presence in the Western Andes of so large a number of species in proportion to its area. The Subtropical Zone of the Central Andes, with its narrow basal connection with the East Andean Fauna and long peninsula-like projection, is almost insular in its isolation; but it has few indigenous species. If this fact is attributable to its inaccessibility, one may reply that the subtropics of the Western Andes are even less accessible. It therefore seems reasonable for us to believe that the Subtropical Zone of the Western Andes, as well as the Tropical Zone at its western base, received its life in part from what is now upper Amazonia, before the Andes were sufficiently elevated to act as an effective barrier between the Subtropical Zones lying on their eastern and western slopes. Since, however, this was obviously at a later date than that at which the Tropical Zones of the eastern and western slopes were separated, there is a closer relation between the life of the upper than between that of the lower zones.

List of Species and Subspecies which Characterize the West Andean Subtropical Fauna.

Nothocercus intercedens
Penelope perspicax [1]
Geotrygon bourcieri [1]
Leptotila verreauxi occidentalis [1]
Phœthornis syrmatophorus syrmatophorus
Agyrtria viridiceps
Thalurania fannyi verticeps
Phaiolaima rubinoides æquatorialis
Helianthea cœligena ferruginea
Vestipedes aureliæ caucensis
Adelomyia melanogenys cervina
Cyanolesbia emmæ
" cœlestes
Schistes albogularis
Eubucco bourcieri occidentalis [1]
Semnornis rhamphastinus
Andigena nigrirostris occidentalis
Aulacorhynchus albivittatus phæolæmus
Chloronerpes rubiginosus gularis [2]
Veniliornis oleaginus aureus [1]
Formicarius rufipectus carrikeri [1]
Grallaricula costaricensis
Synallaxis azaræ media [2]
Siptornis erythrops griseigularis
Automolus ignobilis
Xenicopsis subalaris subalaris [2]
Margarornis stellata
Picolaptes warscewiczi
Campylorhynchus pucherani
Pœcilotriccus ruficeps rufigene [2]
Pseudotriccus annectens
Elænia pudica brachyptera [1]
Myiarchus cephalotes
Masius corunulatus
Attila brasiliensis parambæ
Rupicola peruviana sanguinolenta
Euchlornis riefferi occidentalis
Pyroderus scutatus occidentalis
Thryophilus nigricapillus connectens

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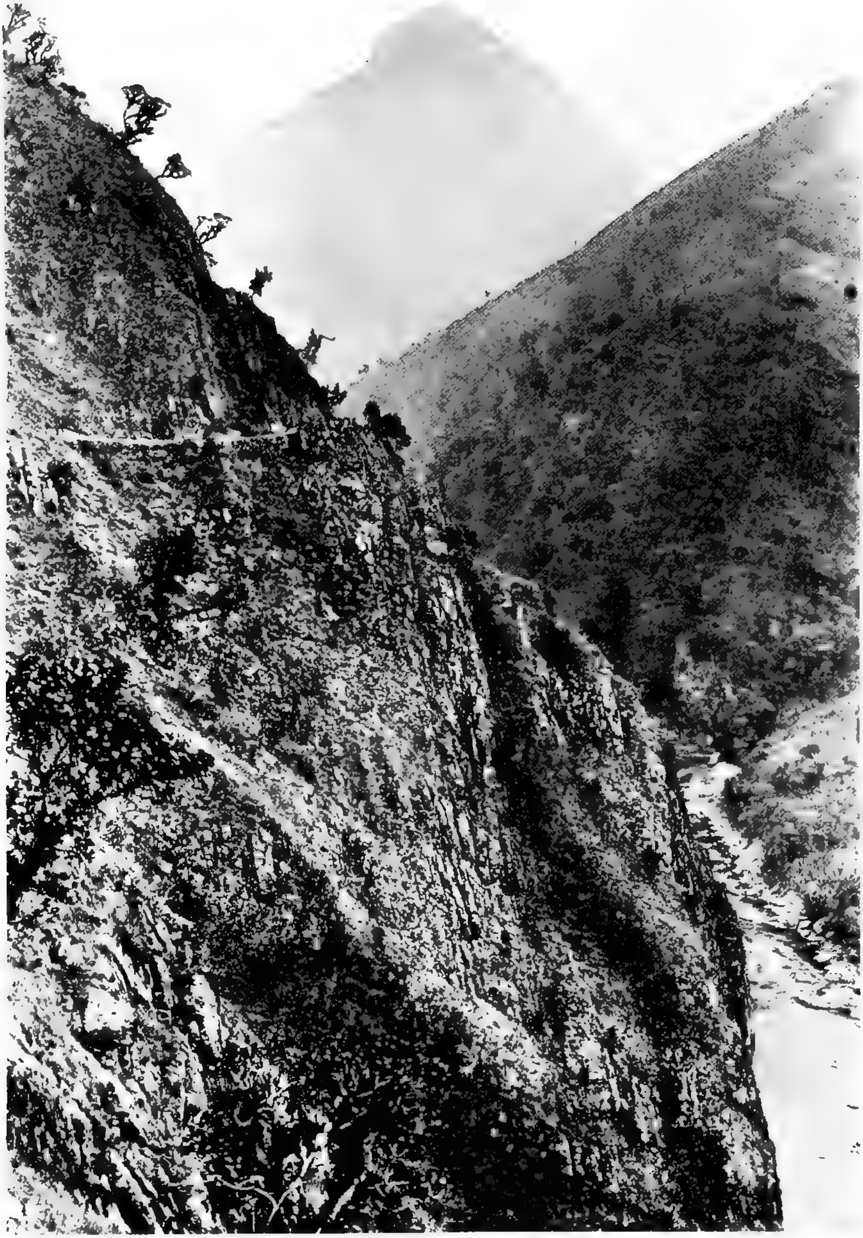
[1] Found also on the western slope of the Central Andes.
[2] Found also on both slopes of the Central Andes.



Rio Negro Cañon near Monteredondo

A scene near the western limit of arborescent vegetation on the Rio Negro. Trail at the left. (Junction of Tropical and Subtropical Zones.)

Pheugopedius spadix
“ mystacalis mystacalis [2]
Henicorhina prostheleuca eucharis
Leucolepis dichrous [2]
Planesticus fuscobrunneus [1]
Saltator atripennis atripennis
Lysurus castaneiceps
Atlapetes latinuchus latinuchus
“ crassus
Diglossa cryptorhis
Chlorochrysa phœnicotis
“ nitidissima [1]
Tangara rufigula
“ aurulenta occidentalis [1]
“ icterocephalus
Tangara gyroloides bangsi
Iridosornis porphyrocephala [2]
Buthraupis cucullata cucullata
“ edwardsi
“ melanochlamys
“ aureocincta
Compsocoma somptuosa cyanoptera
“ notabilis
Phœnicothraupis cristata
Chlorospingus flavigularis marginatus
“ semifuscus
Oreothraupis arremonops
Ostinops salmoni [2]
Cyanolyca pulchra

The East Andean Subtropical Fauna.— The Subtropical Zone in the Eastern Andes, like the Tropical Zone at their eastern base, is merely a part of a much larger region. Our work in Colombia, therefore, can be considered merely as a contribution to the general subject. Even with this limitation it must be confessed that our explorations covered so small a part of the range that we are sadly lacking in detailed information concerning its altitude, the distribution of its forests, and its bird-life.

Miller's section across the Eastern Andes from the upper Magdalena Valley to the Caquetá region (see Expedition No. 5) showed, as has been elsewhere stated, that the Andalucia Pass has an altitude of only 7000 feet, and that both slopes of the range are here forested, the western down to an altitude of 3000 feet, the eastern continuously. In other words, at this point, the Subtropical Zone occupies both eastern and western slopes as well as the crest of the range. It is at this point, and possibly also further south, that the subtropical life of the Amazonian slopes of the Andes enters the upper Magdalena and thus gains access to the Central Andes. The Subtropical Zone evidently extends nearly to the northern end of the Eastern Andes in Colombia, where Cerro Pintado has an elevation of about 8600 feet. Here it is separated from the Santa Marta group by the valley of the Rio Cesar. The zoölogical as well as geological evidence indicates that there has been no connection between these mountains, and the Santa Martan portion of the Subtropical Zone should doubtless rank as a faunal area.

It is also probable that the Venezuelan branch of the Subtropical Zone is deserving of recognition as a distinct faunal area, though it has close relations with the East Andean Fauna of Colombia.

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[1] Found also on the western slope of the Central Andes.
[2] Found also on both slopes of the Central Andes.

As stated in outlining the boundaries of the West Andean Fauna, the subtropical portion of the Central Andes, as a whole, is more closely related to that of the Eastern, than to that of the Western Andes, but the West Andean element on its western slopes is sufficiently strong to make it seem desirable to place that slope in the West Andean Fauna, while the eastern slope may unquestionably be placed in the East Andean Fauna.

In the latitude of Bogotá, the Eastern Andes have a width of about one hundred miles, and it is not improbable that the subtropical eastern slopes may have forms either not found on the western slopes or representative of them. *Ostinops alfredi neglectus* and *O. a. sincipitalis*, and *Xanthoura yncas cyanodorsalis* and *X. y. galeatus*, are evidently representative races of this kind, the first named of each species being found on the eastern, the second, on the western subtropical slope of the range.

As stated in the itinerary of our expedition (No. 7) to the Bogotá region, our route on the eastern slope of the range between Bogotá and Villavicencio did not take us into the humid subtropics and we are not therefore in a position to compare the subtropical life of both sides of the range.

The East Andean Fauna of Colombia has but few species which are restricted to it; its practical physical identity with those portions of the Subtropical Zone to the north and south prevent that isolation which renders cumulative the effects of environment on an organism. While none of the species in the appended list are found in the Western Andes, most of them range beyond the Colombian portion of the Subtropical Zone.

List of Species and Subspecies which Characterize the East Andean Subtropical Fauna.

Nothocercus bonapartei [1]
Penelope cristata [1]
Odontophorus strophium
Geotrygon linearis linearis [1]
Ognorhynchus icterotis [2]
Pyrrhura calliptera
“ souancei [2]
Hapalopsittaca amazonina
Lurocalis rufiventris
Phœthornis syrmatophorus columbianus
Phaiolaima rubinoides rubinoides
Heliodoxa leadbeateri
Helianthea cœligena columbiana
Lafresnayea lafresnayi
Vestipedes aureliæ aureliæ
Adelomyia melanogenys melanogenys
Cyanolesbia kingi kingi
“ mocoa mocoa
Schistes geoffroyi
Eubucco richardsoni granadensis
“ bourcieri bourcieri [1]
Ramphastos ambiguus ambiguus [1]
Andigena nigrirostris nigrirostris
Aulacorhynchus albivitta albivitta [1]
Chloronerpes rubiginosus buenavistæ
Veniliornis oleaginus fumigatus
Terenura callinota
Pyriglena picea [1]

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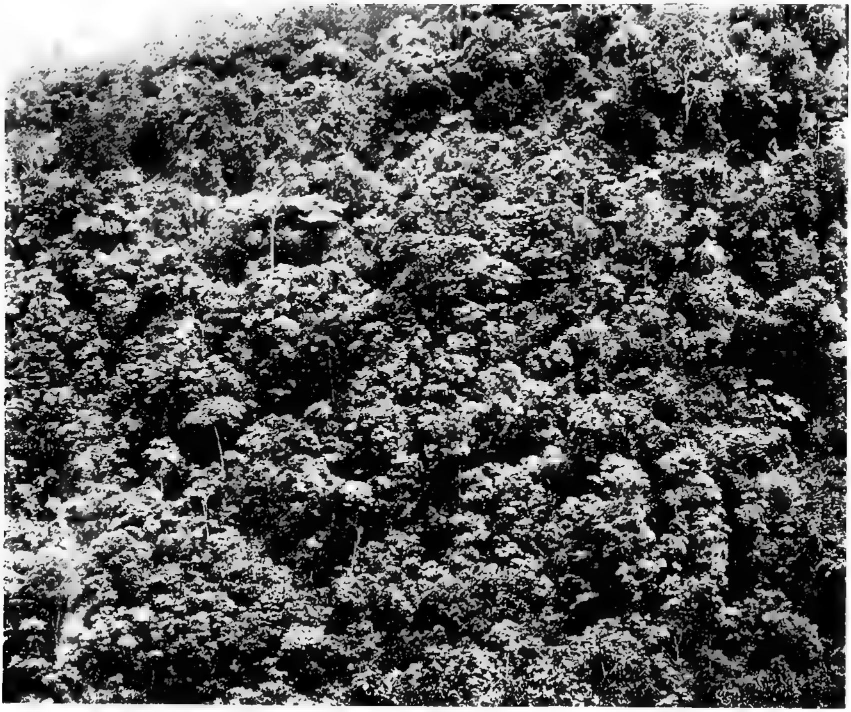
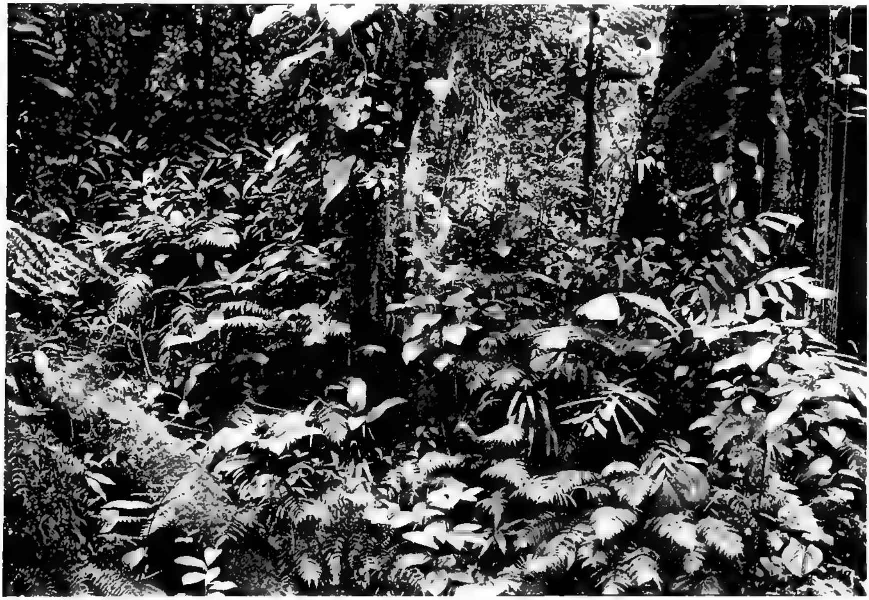
[1] Found also on the eastern slopes of the Central Andes.
[2] Found also on both slopes of the Central Andes.



Primeval Forest at Buena Vista

Photographed with a 14-inch lens at a distance of about five hundred yards. The eastern slope of the Eastern Andes is here heavily forested.
(Tropical Zone; Orinocan Fauna.)



Forest Interior at Buena Vista

A detail of the preceding picture.
(Tropical Zone; Orinocan Fauna.)

Chamæza turdina [2]
Grallaria hypoleuca [1]
Grallaricula nana [2]
Lochmias sororia [2]
Siptornis antisiensis [1]
" striaticollis [1]
Xenicopsis subalaris mentalis [1]
Platytriccus flavigularis [1]
Pseudotriccus pelzelni pelzelni
Hapalocercus acutipennis [2]
Leptopogon erythrops
Phyllomyias griseiceps griseiceps
Acrochordopus zeledoni
Elænia pudica pudica [2]
Conopias cinchoneti [2]
Hirundinea sclateri
Pipra leucocilla coracina
" isidorei isidorei
Piprites tschudi [2]
Masius chrysopterus [1]
Lathria fuscocinerea fuscocinerea [2]
" cryptolopha
Rupicola peruviana aurea [2]
Euchlornis riefferi riefferi [2]
" aureipectus [2]
Pyroderus scutatus granadensis [1]
Pheugopedius sclateri [2]
" mystacalis amaurogaster
Planesticus serranus
" leucops [1]
Catharus birchalli [1]
" dryas [1]
Basileuterus cinereicollis cinereicollis
Sporophila luctuosa [2]
Saltator atripennis caniceps
Atlapetes albifrenatus
" semirufus
Chlorochrysa calliparæa bourcieri [1]
Pipridea melanota venezuelensis
Tangara guttata bogotensis
Tangara aurulenta aurulenta [1]
" gyroloides catharinæ
" c. cæruleocephala [1]
" melanotis [1]
" parzudaki [1]
Compsocoma somptuosa victorini [1]
Calochetes coccineus
Chlorospingus albitempora nigriceps [2]
" flavipectus
" flavigularis flavigularis
Hemispingus melanotis
" superciliaris superciliaris
Ostinops alfredi sincipitalis
" " neglectus
Xanthoura yncas cyanodorsalis

THE CENTRAL AMERICAN EXTENSION OF THE SUBTROPICAL ZONE AND THE PANAMA 'FAULT.'

The range of several Subtropical Zone species extends as far north as Mexico. Conspicuous among them is the Towhee-Tanager, *Buarremon brunneinuchus* which is found from southeastern Peru to the mountains of the State of Vera Cruz, a distance of over 2500 miles, doubtless a more extensive distribution than is shown by any other subtropical species. *Atlapetes gutturalis,* a common Colombian subtropical bird, is found as far north as Guatemala, but, as a rule, South American subtropical species do not go further north than Costa Rica. Here, apparently, judging from the data supplied by Mr. Carriker's valuable work, they sometimes descend to lower

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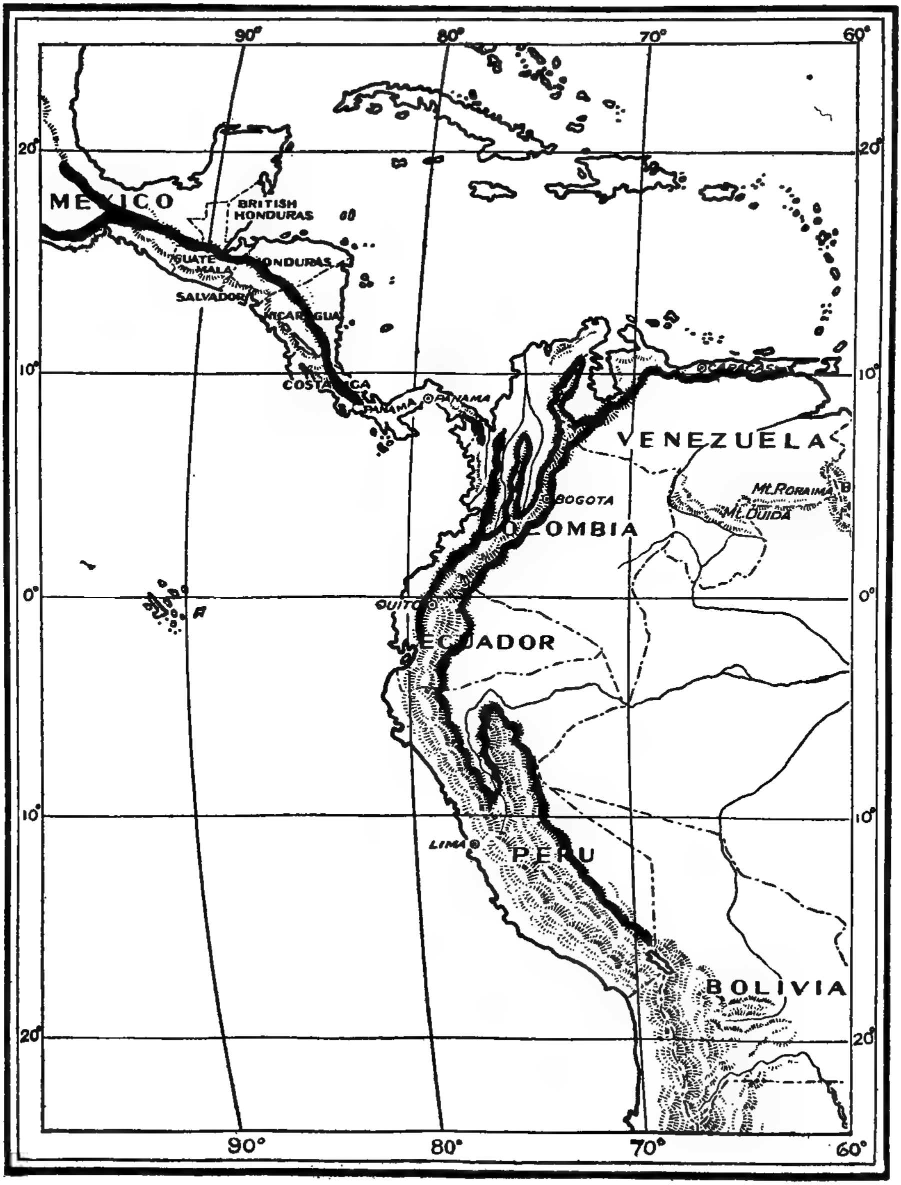
[1] Found also on the western slope of the Central Andes.
[2] Found also on both slopes of the Central Andes.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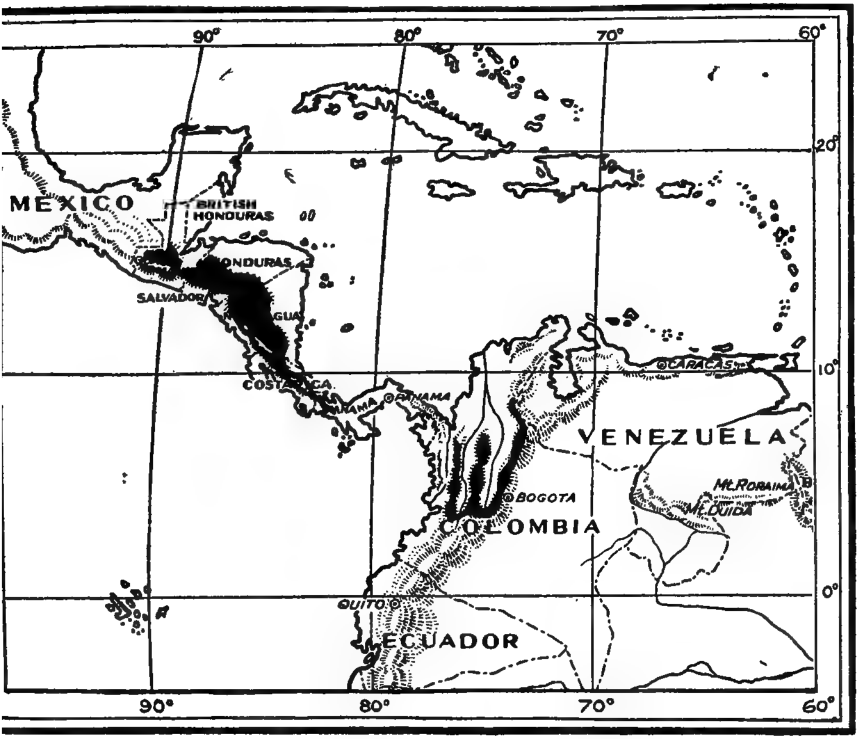
NICARAGUA
COSTA RICA
PANAMA
PANAMA
VENEZUELA
CARACAS
Mt. RORAIMA
Mt. DUIDA
BOGOTA
COLOMBIA
QUITO
ECUADOR
LIMA
PERU
BOLIVIA

Fig. 17. Distribution of *Buarremon brunneinuchus*. A common species of the Subtropical Zone which ranges from southeastern Peru to Mexico but is unknown in the area between eastern and western Panama.

levels than we have found them in Colombia, possibly in response to local conditions peculiar to that miniature transcontinental republic. The close relation existing between Colombia and Costa Rican subtropical bird-life is most striking. In many cases, the same species is common to both countries. In others, slightly differentiated races of the same species occur, and in others still, unquestionably representative, but now distinct, non-intergrading species are found. A list is appended of the species which may properly be considered as belonging to these classes. It shows that some sixty-odd species of Colombian subtropical birds are present or represented in Costa Rica, and usually also in western Panama. About twenty-three of these are found on the subtropical crests of the mountains of eastern Panama, but between these localities these species are not known to occur. An orographic map shows that the Subtropical Zone of the northern end of the Western Andes is separated from the subtropical crests of the mountains on the Colombian-Panama boundary by a tropical area of approximately seventy-five miles in width; while the Subtropical Zone of eastern Panama is separated from the same zone in western Panama by not less than three hundred and fifty miles. Doubtless some of the species in the following list will be found in the intervening area. Thus far, however, not one of the species included in the appended table has been recorded from between eastern and western Panama and more than two-thirds of them are unknown from between the northern end of the Western Andes and western Panama. In other words, there is an apparent hiatus in their range of somewhat over four hundred miles. This statement is based not alone on published data, but on the examination of numerous specimens, including those contained in Goldman's fine collection from the Canal Zone and adjoining territory and eastern Panama which, through the courtesy of the Biological Survey, I have been permitted to see. Goldman reached the subtropical Zone on Mt. Pirri and found there most of the subtropical species listed under Eastern Panama in the subjoined table. None of these, however, was taken elsewhere, though in his work in and near the Zone he collected on Cerro Azul at an altitude of 3000 feet.

Anthony and Ball, of the American Museum Panama Expedition of 1915, discovered a number of subtropical species (including the distinct *Scytalopus panamensis*) on the crest of Mt. Tacarcuna, at an elevation of about 4500 feet. But Richardson's extensive collections from the Tropical Zone of eastern Panama, as might be expected, contained none of the species which characterize the higher, subtropical altitudes. If then these subtropical species are not found in the tropics immediately below the zones in which they occur, it is of course not to be expected that they will occur in the tropics elsewhere. Consequently, the absence of subtropical altitudes between those of eastern and western Panama is in itself evidence of the absence of subtropical species in this area.

If the facts then are as stated, it remains for us to explain what we may term this Panama 'fault' in the Colombian-Costa Rica subtropical stratum of life. To one familiar with the influences governing the distribution of birds, the occurrence of so large a number of species, including many of sedentary habit, at two such widely separated localities, is conclusive proof that the localities themselves were connected. The fact that they *are* joined by the comparatively low land between them has no bearing on the case. The barriers which confine subtropical species to their zone are so effective that these birds could no more cross the Tropical Zone separating the areas they inhabit, than they could an intervening sea. Some of these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CARACAS
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Mt. Roraima
Mt. Duida
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COLOMBIA
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Fig. 18. Distribution of *Atlapetes gutturalis.* A common species of the Subtropical Zone in Colombia (*A. g. gutturalis*) and from western Panama to Guatemala (*A. g. brunnescens*) but which is not known in the intervening area.

species, indeed, are so eminently terrestrial that they rarely fly more than a few yards, and a continuous flight of several hundred miles would for them be impossible.

It is true that birds populate remote oceanic islands, but we do not find among island forms such sedentary species as *Formicarius rufipectus*, *Grallaricula flavirostris*, and *Siptornis erythrops*, etc., which in but slightly differentiated races are common to the Subtropical Zones of Colombia and Costa Rica. Nor do we find species establishing themselves in regions which are already occupied. Early arrivals on oceanic islands encounter no opposition, but the mainland offers no such favorable opportunities for settlement. The available space is taken and the emigration of even a score of species from one mainland home to settle in another mainland home, at a distance of several hundred miles, is an unknown phenomenon in the distribution of bird-life.

In this connection it is quite to the point for us to compare the Subtropical Zone bird-life of the Eastern Andes with that of the Santa Marta mountains. The subtropical portions of these mountains are separated by not more than forty miles; nevertheless, of the one hundred and ninety-eight species received by us from the Subtropical Zone of the Eastern Andes only fifty-odd have been recorded as present or represented in the Santa Marta group. On the other hand, as we have seen, some sixty species of Colombian subtropical birds are present or represented in Costa Rica, though here their ranges are separated by four hundred miles, or ten times as great a distance as that lying between the northern end of the Eastern Andes and the subtropical Santa Marta slopes. Geologists are, however, agreed that the Santa Marta mass is of independent origin and has never been connected with the Andean system. Zoögeographically, its life zones above the Tropical Zone are, therefore, as much islands as though they stood out in the Caribbean Sea. The absence from these zones of many common, widely distributed species is doubtless to be accounted for by the fact that they have never been connected with the corresponding zones in the Andean system.

If, therefore, so small a proportion of East Andean subtropical species have crossed the forty miles lying between that range and the subtropical slopes of Santa Marta, we certainly cannot account for the presence in a continental area, distant four hundred miles, of a larger proportion of West Andean subtropical species under the assumption that they have reached Costa Rica fortuitously or by emigration.

To my mind, the existence respectively in Colombia, Costa Rica and eastern Panama of these two ends and a fragment of the Subtropical Zone, is conclusive proof of a former physical connection of the areas concerned, at which time this zone stretched more or less continuously from northwestern Colombia through Panama to Costa Rica.

If this be true, it follows that the mountain system of Panama must have had an elevation of not less than five thousand feet. The ornithological evidence also indicates that this range could not have had a greater elevation than nine thousand feet. This statement anticipates a treatment of the Temperate Zone, which, as will be shown, is present at the northern end of the Western Andes, above an altitude of 9000 feet. The higher mountains of western Panama and Costa Rica also exceed this altitude but there is no such close relation between the bird-life of the Colombian and Costa Rican Temperate Zones as exists between that of their Subtropical Zones.

The Temperate Zone avifauna of Costa Rica, so far as one can trace its origin, appears to have been derived largely from the north, while that of Colombia has been derived chiefly from the south.

We apparently are therefore justified in assuming that there has been no actual connection between the Temperate Zones of these two regions and this, in turn, implies that the intervening mountains have not exceeded an elevation of 9000 feet.

Subsidence, of which there is abundant geological evidence, and erosion are the factors which have doubtless brought the mountain system of Panama below the subtropical level, except at its eastern and western extremities. In the effort to picture to ourselves this region as it existed when, as we believe, the Subtropical Zone extended from Colombia to Costa Rica, we may try also to imagine the fate of those individuals of representative subtropical species which inhabited that part of the zone which subsequently disappeared. As their home gradually contracted in extent, only two lines of retreat were open to them. They could go downward into the Tropical Zone, or they could go horizontally toward that part of their zone which had not sunk into the zone below.

Species of the Tropical Zone extend their range into the Subtropical Zone, but I recall only one instance of the reverse occurring. Not only are upper zone forms held by those environmental bonds which determine their zone, but the causes which prevent an island form from taking root on the mainland doubtless also prohibit a bird from extending its range to a zone below the one it occupies. In both instances the ground is occupied. So we find none of the species which we believe to have occupied the former Panama Subtropical Zone in the Tropical Zone of that country.

Successful retreat toward either end of the disappearing zone would be even more difficult than to the zone below, for here the resulting overcrowding would bring them into competition with species of similar habits.

I conclude, therefore, that those individuals of subtropical species which I believe inhabited the Subtropical Zone of Panama went out of existence with their zone.

The student of living species, unlike the palæontologist, has no means of determining geologic time. When the Panama 'fault' occurred cannot therefore be determined from zoölogical evidence alone. The absolute identity of many of the birds inhabiting the two widely separated ends of the zone implies that they have undergone no change since their ranges were disconnected. But neither degree of variation nor stability afford a measure of time.

Still one may believe that under the influence of isolation the more plastic species would show some differentiation from one another and the fact of the continued close resemblance of forms, which elsewhere vary geographically, indicates that this 'fault' in the subtropical stratum took place at a comparatively recent period.

The facts in the case suggest that the subsidence which has occurred in Panama, and made parts of its southern coasts the islands of the Gulf of Panama, has also involved the littoral of Colombia. The trend of the Western Andes and the existence of the Atrato valley, make it improbable that this range was connected with the range on the Colombian-Panama boundary. If this be true, we may ask how so many subtropical species could cross from the Western Andes to eastern Panama, and so few go from the Eastern Andes to the much nearer Santa Marta group. The Baudó, or true coast range, through a more southern connection with the Western Andes might, however, have formed the bridge between the main Andean system and the mountains of eastern Panama. We should then have had four, instead of three ranges of the Andes in Colombia. The evidence in support of this theory is far from conclusive, but includes the apparent necessity of a larger tropical area than now exists at the Pacific base of the Andes for the development of the Colombian-Pacific Fauna, and the strong probability, as shown by its fauna, that Gorgona Island was once a part of the mainland.

Our attempts to reach the summit of the Baudó range have unfortunately failed; but such collections as have been made there by Mrs. Kerr apparently show that some Central America species rare, or not found by us in the Western Andes, were common in the coast range. Our data, however, are far from satisfactory, and further exploration in this range would, in my belief, result in the discovery of facts of much significance to the zoögeographer.

Species of the Subtropical Zone[1] *of Colombia with their Representatives in this Zone in Eastern Panama, Chiriqui and Costa Rica.*

Colombia	*Eastern Panama*	*Chiriqui-Costa Rica*
Nothocercus intercedens	———	N. frantzi
Columba albilinea albilinea	———	C. a. crissalis
Claravis mondetoura[2]	———	C. mondetoura
Geotrygon linearis linearis[3]	———	G. chiriquensis
Glaucidium jardini[3]	———	G. jardini
Bolborhynchus ferrugineifrons[2]	———	B. lineolus
Doryfera ludovicæ ludovicæ	———	D. veraguensis
Eutoxeres aquila salvini	E. a. salvini	E. a. salvini
Saucerottia sophiæ saucerrottei	———	S. s. sophiæ
" cyanifrons		C. c. alfaroana
Chlorostilbon gibsoni	———	C. caniveti salvini
Colibri cyanotus	———	C. cyanotus
Heliodoxa jacula jamesoni[4]	H. j. henryi	H. j. henryi
Calliphlox mitchelli	———	C. bryantæ
Lophornis delattrei	L. delattrei	L. helenæ
Pharomacrus auriceps	P. auriceps	P. moccino costaricensis
Trogon collaris	T. collaris subsp.	T. puella
Capito bourcieri occidentalis	C. b. salvini	C. b. salvini
Semnornis rhamphastinus	———	Tetraganops frantzi
Aulacorhynchus albivittus phæolæmus	A. cæruleigularis cognatus	A. c. cæruleigularis
Chloronerpes rubiginosus gularis	———	C. r. uropygialis
Melanerpes flavigula	———	M. formicivorus striatipectus
Veniliornis oleaginus aureus	V. o. aureus	V. o. sanguinolentus
Scytalopus micropterus micropterus	S. panamensis	S. argentifrons
Dysithamnus semicinereus	D. mentalis suffusus	D. m. septentrionalis
" puncticeps puncticeps	———	D. p. puncticeps
Formicarius rufipectus carrikeri	F. r. carrikeri	F. r. rufipectus
Grallaricula flavirostris costaricensis	G. f. brevis	G. f. costaricensis
Siptornis erythrops griseigularis	S. e. griseigularis	S. e. rufigenis
Pseudocolaptes boissoneauti	———	P. lawrencei
Thripadectes virgaticeps sclateri	———	T. rufo-brunneus
Lochmias sororia[3]	L. sororia	
Philydor panerythrus[2]	———	P. panerythrus
" montanus striaticollis	———	P. variegaticeps
Xenicopsis subalaris subalaris	X. s. subalaris	X. s. lineatus
Sclerurus albigularis albigularis[2]	———	S. canigularis
Margarornis squamifera	———	M. rubiginosa

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[1] With exceptions as marked all occur in West Andean Subtropical Fauna.

[2] Eastern Andes.

[3] Central Andes.

[4] Ecuador; unknown as yet from Colombia.

Colombia	*Eastern Panama*	*Chiriqui-Costa Rica*
Premnoplex brunnescens brunnescens	P. b. brunneicauda	P. b. brunneicauda
Sittasomus æquatorialis [2]	———	S. sylvioides levis
Picolaptes lacrymiger lacrymiger	———	P. affinis neglectus
Cephalopterus penduliger	———	C. glabracollis
Pachyrhamphus versicolor versicolor	———	P. v. costaricensis
Acrochordopus zeledoni [1]	———	A. zeledoni
Pseudotriccus pelzelni [1]	P. pelzelni	
Myiochanes ardosiacus	———	M. lugubris
Elænia pudica pudica	———	E. frantzi frantzi
Lophotriccus squamæcrista squamæcrista	L. s. minor	L. s. minor
Myiadestes ralloides venezuelensis	M. coloratus	M. melanops
Catharus birchalli	———	C. m. costaricensis
" fuscater fuscater	———	C. f. hellmayri
Cinclus leuconotus	———	C. ardesiacus?
Henicorhina leucophrys guttata	H. l. guttata	H. l. collina
Troglodytes solstitialis	T. festinus	T. ochraceus
Vireosylva josephæ josephæ	———	V. j. costaricensis
Myioborus verticalis verticalis	M. v. verticalis	M. aurantiacus
Compsothlypis pitiayumi	———	C. p. speciosa
Sturnella magna meridionalis [1]	———	S. m. alticola
Chlorospingus albitempora nigriceps	———	C. novicius novicius
Piranga leucoptera ardens	———	P. l. latifasciata
" testacea	———	" testacea
Buthraupis melanochlamys	———	B. cæruleigularis
Euphonia cyanocephala	———	E. elegantissima
Saltator olivascens	———	S. grandis
Buarremon brunneinuchus	———	B. brunneinuchus
Atlapetes gutturalis gutturalis	———	A. g. brunnescens
Lysurus castaneiceps	———	L. crassirostris
Brachyspiza capensis peruviana	———	B. c. peruviana
Spinus xanthogaster	———	S. xanthogaster

THE TEMPERATE ZONE.

The Temperate Zone lies between the upper limit of the Subtropical Zone and the lower limit of the Paramo Zone, or, approximately, between the altitudes of 9000 and 12,000 feet. In humid regions its upper boundaries coincide with timber-line.

Where the Subtropical Zone is arid and treeless, certain Temperate Zone species may descend to the upper borders of the Tropical Zone. Where a mountain peak or range does not enter far into the Paramo Zone, the Temperate Zone may reach a higher than average level. This is especially true if the zone is forested; but in the absence of forests the Paramo Zone encroaches upon the upper border of the Temperate Zone which may not then exceed 11,000 feet.

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[1] Eastern Andes.
[2] Central Andes.

In Colombia, except when interrupted by the Paramo Zone, the Temperate Zone occupies the crest and both slopes of the ranges on which it occurs. There is, therefore, no such difference in the life of its eastern and western slopes as is found, for example, in those of the Subtropical Zone of the Central Andes.

In the comparatively low Western Andes, the Temperate Zone north of Popayan is present only at a few disconnected localities. Richardson and Miller found it west of Popayan, and Miller and Boyle discovered it on the Paramillo at the northern end of the chain. At both places *Diglossa gloriosissima* was common, but the species has yet to be taken elsewhere.

Doubtless the Temperate Zone is also present on the "Paramo" (so-called) of Frontino, and on the other higher peaks of the northern part of the Western Andes.

In the Central Andes it is probably continuous as far north as Sta. Elena, east of Medellin, and, except for the subtropical break at Andalucia, the Temperate Zone appears to occupy most of the summits of the Eastern Andes, though I am unable to state its northern limits in Colombia.

In Venezuela this zone reaches the vicinity of Merida. In the Santa Marta group, if one may judge from Dr. Allen's summary of our knowledge of its bird-life, the Temperate Zone holds comparatively few representative species. Of seventy-three species which I list as characteristic of the Temperate Zone in the Eastern Andes, only seven are specifically, and only eleven are generically represented in this zone in the Santa Marta mountains. Further field-work will doubtless add to the list of Santa Martan Temperate Zone species, and perhaps explain certain anomalies in distribution contained in Allen's paper. For example, *Buarremon assimilis*, which we have found commonly in the Temperate Zone of all three ranges but never below, is recorded from Bonda (2 adults, 2 juv. in nestling plumage), a locality near sea-level. Again, *Myospiza manimbe*, which we have never found above the Tropical Zone, is recorded on the authority of Bangs from the Paramo of Macotama (alt. 11,000–15,000 ft.).

Southward, the Temperate Zone increases greatly in area in the inter-andine valleys of Ecuador, and on the tablelands of Peru and Bolivia. In Argentina and Chile it descends to sea-level at a latitude not yet determined.

Unlike the Subtropical Zone, the fauna of which is almost wanting in arid, treeless regions, the Temperate Zone has strongly marked humid and

Characteristic Trees of Temperate Zone Forest.
(Photographed near Laguneta, Central Andes.)

arid divisions. The first is characterized by a dense low forest of thickly branched, sturdy trees on which grow numerous epiphytes and parasites, including a great variety of mosses. Allen's description of the Laguneta region (Expedition No. 3) gives an excellent idea of Temperate Zone forest.

The arid portions of this zone include bush-grown or treeless slopes, and the Savanna of Bogotá, with its exceptionally favorable haunts for plains- and marsh-loving species.

The bird-life of the Temperate Zone is composed of an exceedingly interesting combination of species obviously derived from lower zone forms of the same latitude and from forms inhabiting the same zone at a different latitude.

Thus, *Zenaida ruficauda ruficauda, Z. r. antioquiæ, Troglodytes musculus columbæ,* and *Agelaius icterocephalus bogotensis* are racial, intergrading representatives of Tropical forms of the same latitude. While, though now specifically distinct, *Penelope montagni, Trogonurus assimilis, Andigena hypoglaucus* appear respectively to be zonal representatives of *P. cristata, T. personatus,* and *A. nigrirostris,* all of which are found in the adjoining lower zone.

Of the second group, or true Temperate Zone species which have extended their range to the higher parts of the Andes from a latitude where this range reaches sea-level, *Porphyriops melanops bogotensis* is but a slightly differentiated form of *P. m. melanops* of Paraguay, *Scytalopus niger* is found unchanged at sea-level in Chile, and *Catamenia analis schistaceifrons* is an intergrading form of *C. analis analoides* which is found on the coast of Peru.

One of the most interesting results of our study of zonal life is the discovery that two forms of *Streptoprocne zonaris* inhabit the Andes; one, *S. z. albicincta,* occurring in the Tropical and Subtropical Zones; the other, *S. z. altissima,* in the Temperate Zone. Although these closely related forms, when feeding, are doubtless associated, we have found no intergrades between them. The latter indeed, more closely resembles *S. z. zonaris* of southern Brazil than it does *S. z. albicincta,* and it is not improbable that it has been derived from *zonaris* through extension of range with increasing altitude in the Andes, rather than from *albicincta.* The latter, however, is also a racial representative of *zonaris.* Hence apparently two forms having a common ancestor with which both intergrade, meet as species.

We must look not only to more southern, but to more northern latitudes if we would discover the ancestral type from which certain species of the Temperate Zone in Colombia were derived. Possibly no more convincing proof of the northern origin of a Colombian Temperate Zone race could be asked for than is furnished by *Otocoris alpestris peregrina,* a common species of the Bogotá Savanna, to which it appears to be restricted.

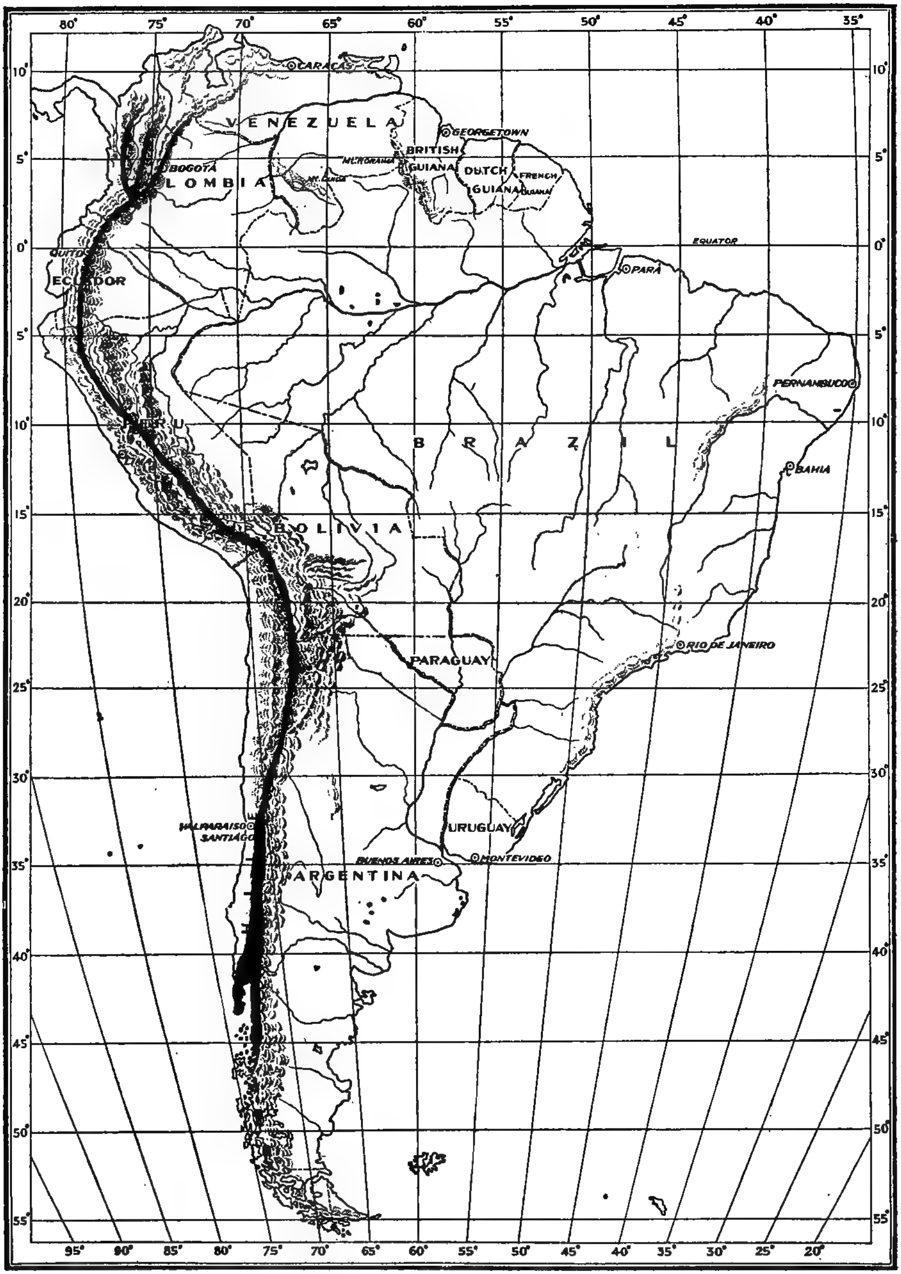
VENEZUELA
COLOMBIA
BOGOTA
CARACAS
GEORGETOWN
BRITISH GUIANA
DUTCH GUIANA
FRENCH GUIANA
QUITO
ECUADOR
PERU
BOLIVIA
BRAZIL
EQUATOR
PARÁ
PERNAMBUCO
BAHIA
RIO DE JANEIRO
PARAGUAY
URUGUAY
MONTEVIDEO
BUENOS AIRES
ARGENTINA
VALPARAISO
SANTIAGO

Fig. 19. Semi-diagrammatic representation of the Range of *Scytalopus niger*, a Temperate Zone species which ranges from the sea-level in Chile to 10,000 feet in the Colombian Andes, without showing racial variation. Its range is not known to be as continuous as the diagram indicates.

Fulica americana columbiana, Ixobrychus exilis bogotensis and *Asio flammeus bogotensis* are also Savanna forms of presumably northern origin which have reached Colombia under climatic conditions no longer existing, and are now associated there with species of southern origin, which have apparently arrived during prevailing conditions.

Characteristic forms of the Temperate Zone whose origin is not now determinable, are species of the genus *Grallaria, Ochthœca, Diglossa* and *Buthraupis,* while the Hummingbirds, of which we found some sixteen species, are more numerous than the members of any other family.

The more uniform climatic conditions of higher altitudes, as well as of higher latitudes, tends to create corresponding uniformity in their life. Unlike the zones below it, the Temperate Zone of Colombia cannot be divided into smaller faunal areas. Even when Temperate Zone islands of the same range are as widely separated as are those of the Western Andes, there is striking similarity in their bird-life. Hence we conclude that as with the Subtropical Zone of Colombia and Costa Rica, they were at one time connected, and owe their present isolation to erosion in the intervening area. This belief is strengthened when we compare the life of what we believe to be a true "oceanic" Temperate Zone island in the Santa Marta group, with that of the same zone in the Eastern Andes, and find how few Andean species have crossed to the Santa Martan Zone.

In the Central and Eastern Andes the Temperate Zone is too continuous to permit of isolation with subsequent differentiation.

In defining the boundaries of the Subtropical Zone we have seen that when the Andean system of Ecuador and southern Colombia develops into three distinct ranges, the Subtropical Zone of the Pacific slope is continued northward in the Western Andes, that of the Amazonian slope in the Eastern Andes, while the Central Andes, having an indirect connection with both Western and Eastern ranges, has received a certain amount of life from each, but has little of its own.

When, however, we examine the topographical relations of the Temperate Zone, we find that the Central Andes carries a direct northward extension of the great Ecuadorian interandine temperate region, and as such it has some species, particularly at its southern end, unknown elsewhere in Colombia. Examples are *Anæretes p. æquatorialis, Conirostrum fraseri,* and *Urothraupis stolzmani.*

The importance of giving due consideration to suitability of haunt in the study of zoögeography, is forcibly illustrated in the Colombian Temperate Zone by the bird-life of the Bogotá Savanna.

Apparently no other part of this zone in Colombia possesses the physical characteristics of that area. Though evidently much modified by cultivation it still may be described as a flat, treeless plain suitable for the wants of such plains-loving species as Horned Larks and Pipits, dotted with sloughs and reedy marshes, ideal haunts for Coots, Rails, and Bitterns. Nowhere else in the Temperate Zone of Colombia do these and certain other species find the conditions they require. The Savanna, therefore, constitutes the entire range of such forms as *Rallus semiplumbeus, Porphyriops melanops bogotensis, Fulica americana columbiana, Ixobrychus exilis bogotensis, Asio flammeus bogotensis, Habrura pectoralis bogotensis,* and *Otocoris alpestris peregrina,* when it follows that, lacking this favorable locality, none of these species would be represented in Colombia.

Various other species, generally wide-ranging tropical and subtropical forms, are found more or less regularly in the Savanna, but are unknown elsewhere in the Colombian Temperate Zone. Examples are *Egretta candidissima, Florida cærulea, Gallinula galeata,* all of which have been found in the Savanna by Hermano Apolinar Maria, whom I have to thank for this information.

So small a part of the Andean Temperate Zone is contained in Colombia that what has been written here can be considered only as a contribution toward the solution of a very large problem.

Birds of the Temperate Zone.

Family *Tinamidæ*

Nothocercus julius

Family *Cracidæ.*

Penelope montagni

Family *Columbidæ*

Zenaida ruficauda ruficauda
" " antioquiæ

Family *Rallidæ*

Rallus semiplumbeus
Porphyriops melanops bogotensis
Fulica americana columbiana

Family *Bubonidæ*

Asio flammeus bogotensis
" stygius

Family *Psittacidæ*

Pionus seniloides seniloides
Hapalopsittaca fuertsi

Family *Cypselidæ*

Streptoprocne zonaris altissima

Family *Trochilidæ*

Helianthea helianthea
" bonapartei
" lutetia lutetia
Lafresnayea saül saül
Aglæactis cupripennis cupripennis
Vestipedes vestitus vestitus
" " smaragdinipectus
" mosquera
" derbyi longirostris
Metallura tyrianthina tyrianthina
Chalcostigma herrani
Ramphomicrom heteropogon microrhynchus
Opisthoprora euryptera
Psalidoprymna victoriæ victoriæ
" gouldi gouldi

Family *Trogonidæ*

Trogonurus assimilis

Family *Ramphastidæ*

Andigena hypoglauca

Family *Picidæ*

Hypoxanthus rivoli rivoli
“ “ brevirostris
Veniliornis nigriceps equifasciatus

Family *Hylactidæ*

Scytalopus niger
“ griseicollis
“ infasciatus
Myornis senilis
Acropternis orthonyx

Family *Formicariidæ*

Chamæza mollissima
Grallaria squamigera
“ ruficeps
“ rufocinerea
“ monticolor
“ milleri
Oreopezus rufula rufula

Family *Dendrocolaptidæ*

Schizœaca fuliginosa
Synallaxis a. elegantior
“ gularis gularis
“ subpudica
Thripadectes flammulatus

Family *Tyrannidæ*

Ochthodieta fumigatus
Ochthœca œnanthoides fumicolor
“ brunneifrons
“ frontalis
“ lessoni
Mecocerculus leucophrys setophagoides
“ stictopterus
“ uropygialis
Anæretes parulus æquatorialis
“ agilis

Family *Cotingidæ*

Euchlornis arcuata
Heliochera rubricristata

Family *Hirundinidæ*

Orochelidon murina

Family *Troglodytidæ*

Cinnicerthia unirufa
“ unibrunnea
Cistothorus apolinari
Troglodytes musculus columbæ

Family *Turdidæ*

Semimerula gigas gigas
“ “ gigantodes

Family *Mniotiltidæ*

Myioborus ornatus
“ chrysops
Myiothlypis nigrocristatus
Basileuterus luteiviridis
“ richardsoni

Family *Motacillidæ*

Anthus bogotensis

Family *Alaudidæ*

Otocoris alpestris peregrina

Family *Fringillidæ*

Pheucticus uropygialis uropygialis
Catamenia inornata minor
“ analoides schistaceifrons
“ homochroa
Spinus spinescens
“ nigricauda
Spodiornis jardini
Atlapetes schistaceus
“ pallidinuchus pallidinuchus
“ “ papallactæ
Buarremon assimilis

Family *Cœrebidæ*

Diglossa gloriosissima
“ brunneiventris
“ lafresnayei
“ aterrima
Conirostrum sitticolor
“ rufum
“ fraseri

Family *Tanagridæ*

Iridosornis dubusia dubusia
“ “ ignicapillus
“ “ cæruleoventris
Pœcilothraupis lunulata lunulata
“ palpebrosa palpebrosa
“ “ olivaceiceps
Buthraupis cucullata gigas
“ eximia chloronota
“ “ eximia
Sericossypha albocristata
Hemispingus atropileus

Hemispingus superciliaris nigrifrons
Pseudospingus verticalis
Urothraupis stolzmanni
Psittospiza riefferi riefferi

Family *Icteridæ*

Cacicus leucorhamphus
Agelaius icterocephalus bogotensis
✓ Sturnella magna meridionalis
Microglæus subalaris

Family *Corvidæ*

Cyanolyca armillata armillata
" " quindiuna

THE PARAMO ZONE.

The name 'Paramo' is locally applied to any treeless region lying above 10,000 feet. Thus, the road from Bogotá to Chipaque is commonly said to pass over the Paramo of Boqueron whereas, faunally, it nowhere extends above the Temperate Zone.

The true Paramo Zone extends from the upper limit of trees to the lower limit of snow. On Santa Isabel, in the Central Andes, Allen and Miller found this zone between the altitudes of 12,500 and 15,200 feet, but where the upper border of the Temperate Zone is arid and lacking in forest the paramo appears to reach a lower level. Thus, on the range east of Bogotá, the mullein-like 'frailejon' so characteristic of the Paramo Zone, grows abundantly at 11,000 feet, and some plants of this species are found even lower.

Where, however, on peaks which do not rise to snow-line, humid conditions prevail, the tree-line may reach 13,000 feet and the lower level of the Paramo Zone be correspondingly higher.

Miller and Boyle reached this altitude on the Paramillo, the highest point in the Western Andes, but found there but few species which may be considered as representative of this zone, including *Orodynastes striaticollis striaticollis.* We have elsewhere found this bird only on the Paramo of Santa Isabel, but I observe that Bangs records it from an altitude of 8000 feet in the Santa Marta group, and it possibly may not be a true Paramo Zone form.

Conditions on the Paramillo seem favorable for the presence of species which are common on Santa Isabel, and their absence can only be attributable to the isolation of this peak and may be considered to indicate that at no time has it been connected with areas having the life of the Paramo Zone. This zone in its full development is therefore, apparently absent in the Western Andes.

In the Central Andes it occurs in at least twelve places between the Paramos of Las Pappas and Santa Isabel. Both these localities were visited by our expeditions (Nos. 3 and 4) and Allen's careful description of the country traversed should be read in this connection.

In that part of Colombia lying south of Popayan, where the Andean system retains much the same character it possesses in Ecuador, there are no less than twenty mountains which rise above the lower level of the Paramo Zone.

The Eastern Andes possesses some twenty mountain summits of sufficient altitude to support a Paramo Zone fauna, but few of them have been explored. This zone also exists in the Andes of Merida, Venezuela, and in the Santa Marta group.[1]

The proportion of paramo species in the last-named range is higher than that of any of the three lower zones, a fact which possibly is due to the open nature of the haunts of paramo birds and their consequent exposure to storms which may transport them considerable distances.

If we except so cosmopolitan a genus as *Gallinago,* the species of the Paramo Zone of Colombia are all of southern origin. All the genera represented reach sea-level in the south Temperate Zone and most of them are absent from the Tropical Zone. *Cinclodes, Upucerthia* and *Muscisaxicola* are admirable examples of South Temperate Zone genera which, with increasing altitude, have extended their range northward to the very limits of the Paramo Zone. Even the Condor, a sea-level bird of Patagonia, makes what we think of as his true home on the summits of the Northern Andes, where the factors which determine zonal boundaries keep him to his true level quite as effectively as they do a diminutive Marsh Wren. Like that of the Temperate Zone, the life of the Paramo Zone in Colombia requires no faunal subdivisions. Allen and Miller's work on Santa Isabel shows that the Central Andes, as the topography of the region indicates, is the main northward extension of the Andean system. *Muscisaxicola columbiana* and *Upucerthia excelsior columbiana,* both representing genera hitherto unknown in Colombia, were found by them in numbers. Doubtless additional work in the Paramo Zone of the Central Andes would reveal the presence of other southern forms.

Birds of the Paramo Zone.

Family *Charadriidæ*

Gallinago nobilis
" jamesoni

Family *Anatidæ*

Nettion andium

Family *Cathartidæ*

Sarcorhamphus gryphus

Family *Trochilidæ*

Pterophanes temmincki
Vestipedes paramillo

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[1] The occurrence of *Cinclodes* in the Paramo Zone of the Santa Marta group and of the Andes near Merida, Venezuela, is surprising. No other species of this genus is known from nearer than Ecuador. Possibly the genus will still be discovered in the Colombian Andes.

Metallura williami
Oxypogon stübelli

Family *Hylactidæ*

Scytalopus canus
" sylvestris

Family *Formicariidæ*

Upucerthia excelsior columbiana

Family *Dendrocolaptidæ*

Leptasthenura andicola
Siptornis flammulata multostriata
Siptornis flammulata quindiana

Family *Tyrannidæ*

Orodynastes striaticollis striaticollis
Muscisaxicola alpina columbiana

Family *Troglodytidæ*

Cistothorus æquatorialis

Family *Fringillidæ*

Phrygilus unicolor grandis
" " geospizopsis

Tabular Synopsis by Families of Zonal Distribution of Colombian Birds Collected by the American Museum's Expeditions.

Families	*Zones*			
	Tropical	Sub-tropical	Tem-perate	Paramo
Tinamidæ	12	2	1	
Cracidæ	10	4	1+1[1]	
Odontophoridæ	6	2		
Columbidæ	22	5	2+1[1]	
Opisthocomidæ	1			
Rallidæ	11		3	
Podicipedidæ	2		1[1]	
Heliornithidæ	1			
Laridæ	2			
Charadriidæ	4			2
Parridæ	3			
Eurypygidæ	1			
Œdicnemidæ	1			
Psophiidæ	1			
Ibididæ	3			
Plataleidæ	1			
Ciconiidæ	1			
Ardeidæ	13			
Palamedeidæ	2			
Anatidæ	6	1		1
Phalacrocoracidæ	1			
Anhingidæ	1			
Cathartidæ	3	2[2]	2[1]	1

[1] Ranging upward from the Subtropical Zone.
[2] Ranging upward from the Tropical Zone.

	Zones			
Families	Tropical	Sub-tropical	Tem-perate	Paramo
Falconidæ	33	11[2]	1+5[2]	
Bubonidæ	8	1	2+1[2]	
Psittacidæ	22	6+1[2]	2	
Alcedinidæ	4			
Momotidæ	9	1		
Caprimulgidæ	9	2+1[2]	1	
Cyselidæ	5	2[2]		
Trochilidæ	48	37+3[2]	16+6[1]	4
Trogonidæ	10	4	1	
Cuculidæ	9	4[2]		
Capitonidæ	7	4		
Ramphastidæ	17	7+1[2]	1+1[1]	
Galbulidæ	8			
Bucconidæ	19	1[2]		
Picidæ	25	7+1	3+1[1]	
Conopophagidæ	3	1[2]		
Hylactidæ		1	5	2
Formicariidæ	82	17+5[2]	7	1
Dendrocolaptidæ	48	27+3[2]	5+5[1]	3
Tyrannidæ	90	38+5[2]	10+5[1]	2
Pipridæ	22	7		
Cotingidæ	24	15	2	
Hirundinidæ	8	1+2[2]	1	
Sylviidæ	3			
Troglodytidæ	23	12	4+2[1]	1
Cinclidæ		1		
Mimidæ	4	1[2]		
Turdidæ	8	8+3[2]	2	
Vireonidæ	7	3+1[2]	5	
Mniotiltidæ	10	5+1[2]	5	
Motacillidæ			1	
Alaudidæ			1	
Catamblyrhynchidæ		1	1	
Fringillidæ	35	17+7[2]	11+1[1]	2
Cœrebidæ	13	7+2[2]	8+2[1]	
Procniatidæ	1	1[2]		
Tanagridæ	51	51+7[2]	15+5[1]	
Icteridæ	22	6+1[2]	4+1[1]	
Corvidæ	2	2	2	

[1] Ranging upward from the Subtropical Zone.

[2] Ranging upward from the Tropical Zone.

Part II.

A DISTRIBUTIONAL LIST OF THE BIRDS COLLECTED IN COLOMBIA BY THE AMERICAN MUSEUM'S EXPEDITION.

Classification.— It is greatly to be regretted that no one system of classification is accepted as authoritative by writers on South American birds. Everyone who has experienced the annoyance of referring to faunal papers, the writers of no two of which may have adopted the same system of classification, and which as authors' 'separates,' are usually without an index, should admit that convenience of reference is here of first importance.

The writer has seen too many systems of classification accepted and rejected to have much faith in the stability of any now, in greater or less measure, current. So far as he personally is concerned it is immaterial which one of half a dozen now in use be followed, but it is material that we use that one consistently.

If we except Sclater and Salvin's 'Nomenclator Avium Neotropicalium' (1873), which included the birds of Mexico and Central America as well as those of South America, only one list of South American birds, as such, has ever been published. This, Brabourne and Chubb's 'Birds of South America,' is not only as authoritative in the present state of our knowledge, as, we can perhaps expect such a general work to be, but it conforms to the Classification of Sharpe.

From the standpoints of both scientific excellence and expediency it seems therefore eminently desirable to accept the classification of this work, and I have adopted it in the present paper. The numbers in parentheses preceding each name in the systematic portion of this paper are those of Brabourne and Chubb's work.

Nomenclature.— The nomenclature in Brabourne and Chubb's list is binomial, the authors, having deferred an expression of opinion of the subspecific relations of the forms listed until these forms were treated at length in succeeding volumes of their work, a plan, which, owing to the unfortunate death of the senior author, will now never be realized.

It is, of course, out of the question to use binomial nomenclature in the present paper, and the trinomials employed follow current usage, or express the author's views as they have been formed through a study of the material at hand and under the requirements stated below.

Aside from this necessary change from binomialism to trinomialism, I have followed the nomenclature of Brabourne and Chubb's list, except in a limited number of cases where additional material has led to other conclusions. From the standpoint of nomenclature, pure and simple, I have made no attempt to revise the names they present.

Treatment of Genera.— I do not approve of the present-day excessive multiplication of genera. I believe that we should treat what we term genera much as we treat species, and when the variations from a given generic type do not result in actual segregation, but simply mark the connecting stages, then such variations should be considered of subgeneric value.

We all exhibit a tendency to forget that a genus is, in a large measure, an artificial creation, and that the characters on which it is based are ill-defined, unstandardized, and arbitrarily employed. In the hands of the systematist whose talent, often highly developed for analysis, leads him to magnify the importance of minor characters, classification becomes an end rather than a means. Accepting the doctrine of evolution he nevertheless seems determined to prove the theory of special creation. It is his *business* to assort, arrange and pigeon-hole certain facts as these facts are represented by specimens. The necessity for drawing up diagnoses, keys and descriptions for the identification of these specimens leads him to search for differences rather than resemblances. To these differences he gives names, and to these names we apparently cannot avoid attributing a significance they are often far from possessing. As a result, nomenclature overshadows classification and facts are obscured or wholly disguised by names.

There is unquestionably urgent need for a thorough generic revision of many groups of South American birds, but the reviser should not feel compelled to found a new genus on every species showing a departure from the set of artificial characters he has assigned to the so-called type. Furthermore, in order to determine whether the differences observed are of generic or subgeneric value, his revision should be based on all, not a part, of the species of the group concerned.

It was first intended in the preparation of the following list of species collected by us in Colombia, to use currently accepted generic terms, and when recent authorities differed to attempt to reach an independent decision based on original investigation. I soon found, however, that the instances in which authorities differ are so numerous, that a proper consideration of the points at issue would require both far more time and material than were available, and I was forced to abandon this plan. I have, consequently, followed sometimes one author, sometimes another, and the results here presented I frankly confess to be both inconsistent and unsatisfactory. I feel that there is no hope for uniformity in the treatment of this question of genera, until systematists reach some agreement in regard to what constitutes a generic character. At present we are without such a standard. The genus of one author is the subgenus of another, and is not recognized at all by a third. In many instances, therefore, a genus becomes merely a personal expression of opinion concerning the taxonomic value of certain admitted characters. The same species may be referred to a dozen or more different genera by as many writers, all of whom may agree on the details of structure and relationships involved, and disagree only on questions of nomenclature.

If the ultimate object of systematic zoölogy were classification based only on analysis, we might be warranted in carrying dissection and description to their utmost limit and applying to the results as many names as the most minute differences discovered seemed to require. It is, however, commonly agreed among biologists that the primary object of systematic zoölogy is to provide a nomenclature which can be used with some degree of precision, and which shall be based not wholly upon analysis but to a degree upon synthesis as well.

So far as species and their geographical races are concerned, the trinomial system of nomenclature permits the systematist to recognize but slightly differentiated forms by name without obscuring their more essential relationships. He may not express lines of descent, even if they are known, he may indeed name first the most recent offshoot of a certain stock, but in the naming of a subspecies he does not disguise its group relationships.

In our treatment of species, intergradation, known or probable (see beyond under Treatment of Subspecies) is the test which determines subspecific status. But in our treatment of genera, this test is largely ignored. We have, it is true, subgenera, but so far as practical nomenclature is concerned we are *trinomial with species* and *binomial with genera.* In consequence, many of our generic terms are just as false, just as misleading, just as far from conveying an idea of actual relationships, as though we were to use a binomial for every subspecies. They are, indeed, more misleading since in the latter case the name employed would indicate at least generic relationship, while in the former all suggestion of relationship may be lost.

I am aware that the two cases are not wholly comparable, and that strictly to apply the test of intergradation to generic groups, would, in some cases, place in the same genus species, which in the light of our current understanding of what constitutes a genus, could not be considered as generically related; and thereby lead to nomenclatural results as undesirable as those based on excessive analysis. But I am also aware of how erroneous an impression may be given by unduly emphasizing differences which are obviously of less importance than resemblances, and then, chiefly for convenience in classification, labeling them with a name to which we can no more help attaching the attributes of an entity, than we can avoid thinking of political boundaries as physical facts.

Two species, for example, may be ninety-five percent alike, and five percent unlike, in their so-called generic characters. The five percent of unlikeness is made the basis of a generic division, a new name is given and the ninety-five percent of resemblance is thereby effectually concealed by the combined results of analysis and nomenclature. I will illustrate with the following examples:

The American Quails to which the name Bob-white is commonly applied, are by most authors placed in two genera, *Colinus* (or its nomenclatural equivalent *Ortyx*) and *Eupsychortyx*. The 'generic' differences between *Colinus virginianus* of the United States and *Eupsychortyx cristatus* of northern South America, structurally as well as geographically the most widely separated species of the group, are found in the feathers of the head and wings; '*Eupsychortyx*' having the central crown-feathers elongated and forming a well-defined crest, while the first (outer) primary is slightly shorter than the eighth, rather than longer, as in *Colinus*. There is also a well-marked difference in pattern of coloration, though both are obviously quails.

Current standards in ornithology would accept these differences as of generic value, and if the two species mentioned were the only ones concerned, the appropriateness of the generic distinctions mentioned would not be questioned. But in Central America, from Yucatan to Costa Rica, or in other words, from the southern limit of the range of true *Colinus* in Guatemala to the northern limit of the range of *Eupsychortyx* in western Panama, there are found several species in which a crest is evident, in which the wing-formula is sometimes that of the northern bird, at others that of the southern, and which also approach the type of coloration shown by the South American species.

In short, so far as the characters mentioned are concerned, these Central American species are intermediate or connecting forms. Practical evidence of the truth of this statement may be found in their treatment by various recent authorities, some of whom refer them to one 'genus' some to the other. In spite of their superficial unlikeness, it is apparent, therefore, that a line generically separating North American Bob-whites from South American Bob-whites cannot be drawn, and hence it follows that a nomenclature which recognizes generic distinction between them, conceals the biologically significant fact of their group relationship.

Evidence of the closeness of this relationship not found in the birds' skins is supplied by their notes. The calls of all the species have not as yet been recorded, but I can affirm from personal experience that the call of *Colinus nigrogularis* of Yucatan and of *Colinus cristatus leucotis* of Colombia is essentially the familiar "Bob-white" of *Colinus virginianus*. The voice of the southern bird lacks the volume of that of the northern one, but the notes and their peculiar quality are the same in all three. In view of all these facts, I feel that the actual relationships of the species of this group are more nearly expressed by referring them all to the genus *Colinus*.

To illustrate further what I feel to be the evils of unwarranted generic separation, there is found in southern South America (Bolivia, southern Brazil, Argentina and Chile) a group composed of those species of small black and white woodpeckers, the close relationship of which to the Downy Woodpecker is obvious, and which have generally been considered as congeneric with that species. They all have the back barred as in *Dryobates scalaris*, of the southwestern United States and Mexico, and the more western species (*lignarius*) has the underparts heavily streaked. Since, however, in this respect it differs from the south Brazilian species *cancellatus*, more than does that species from *scalaris*, this cannot be considered a character of generic importance. The southern birds, it is true, have all, instead of only the lateral tail-feathers barred as in our northern species; but although I believe that pattern of coloration is often a much better generic character than differences of degree in the shape of bill, relative length of wing, etc., no one, I think, would claim that this difference in the pattern of tail-marking would warrant generic separation. The only 'structural' differences said to exist between the North American and South American species of these Woodpeckers, are to be found in the relative length of the primaries and secondaries, which results in giving the southern birds a more 'rounded' wing. On the basis of this character it is, therefore, proposed to segregate them in the genus *Dyctiopicus* Bonap., a proceeding which would conceal what I believe to be the generic relationships of the Downy Woodpeckers of South America and North America, a relationship of high importance zoögeographically since in the territory lying between Bolivia and western Panama no form of this group is known to occur. A broader view of this case would involve a consideration of the generic relationships of the New World and Old World forms of these Woodpeckers, but into this phase of the subject I am not now prepared to enter, and I here insist only on the congeneric affinities of the New World species. That the call-note of *Dryobates lignarius* of western Argentina and Chile resembles the familiar *peek* of our Downy Woodpecker is of significance in this connection.

This is not the only case in which generic separation would conceal, so far as nomenclature is concerned, the exceedingly significant fact that species of the same group are present in what may be roughly termed temperate North America and temperate South America, while no species of the group is found in the intervening region.

An Avocet (*Recurvirostra*) and Ridgway's Glossy Ibis (*Plegadis*), for example, are found on the highlands of Bolivia and Peru, but the first genus is not encountered again south of Guatemala (where it is found only as a winter visitant from further north) and the Glossy Ibis (*Plegadis autumnalis*), a close ally of the Peruvian species, has not been recorded from south of the United States.

The distribution of Flickers presents a similar case. Found throughout North America south to Guatemala they occur again on the highlands of Peru, but are unknown in the intervening countries.

It is now proposed, however, to remove the Flickers of the Peruvian highlands from the genus *Colaptes* on the basis of their larger, heavier bill and shorter wing, and while it is true that these characters are obvious, I feel that the even more obvious and striking resemblances between the birds of North America and those of South America call for recognition under a common generic name.

I am not unfamiliar with the perplexing problems which confront the systematist. The treatment of the Chilian and Brazilian members of this group of Flickers is a case in point. I know from experience how difficult of consistent application is a nomenclature which insists that definite lines be drawn where only indefinite boundaries exist; but I maintain, to quote the title-page motto of the American Ornithologists' Union's 'Check-List,' that "Zoölogical nomenclature is a means, not an end, of Zoölogical Science," and that any procedure which tends to defeat this end must handicap the branch of science to which it is applied.

Treatment of Subspecies.— Believing that classification is designed to show relationships rather than to serve the ends of the classifier, I have aimed to treat each case involving the use of a trinomial name on its own merits with reference to the factors involved. To refuse to use trinomials until the actual intergradation of the forms concerned is proven, is, in my opinion, as undesirable as to make every supposed representative form a subspecies.

To lay down a certain rule and blindly be governed by it, is to handicap one's discrimination and experience. Everyone accustomed to handling large series of specimens knows that complete intergradation remains to be demonstrated between many of our familiar birds whose subspecific standing is undoubted. The degree, and particularly the character of the differences exhibited, range, environment, faunal areas, the relative plasticity of the species in question, the action of other organisms in the regions concerned under similar circumstances, these and other factors such as habits, voice, etc., are to be considered in reaching a conclusion regarding the status of any form.

To express within the narrow limitations permitted by trinomial nomenclature what we believe to be the facts in the case should, in my opinion, be our first object; and I consequently have classed as subspecies (1) all representative forms whose intergradation is believed to be proven by the specimens examined; (2) all representative forms whose ranges are not separated by faunal or physical barriers, and which exhibit differences of a racial character; (3) all representative forms whose ranges are separated by physical or faunal barriers but which exhibit such slight differential characters that they may intergrade by individual variation; (4) all representative forms whose ranges are separated by physical or faunal barriers, which do not intergrade by variation but which are apparently so closely related that they might, with reasonable certainty, be expected to intergrade were their ranges continuous.

The first group calls for no comment. The second contains by far the larger number of cases in which the trinomial designation is employed. Degree and nature of difference, and proximity of known ranges are usually the determining factors here, and any opinion reached must depend upon the weight given to them.

No one, for example, comparing specimens of the Andean forms of *Pyroderus scutatus*, would doubt their subspecific status. *Pyroderus scutatus orenocensis* is found in western Venezuela, *P. s. granadensis* in eastern Colombia, *P. s. occidentalis* in western Colombia, and *P. s. masoni* in eastern Peru. The species has not yet been recorded from Ecuador, but the close resemblance of the Peruvian race to the more northern races, in connection with the possibility of their geographic contact, leaves small doubt of their intergradation and they are, therefore, ranked as subspecies.

It is when we come to a nomenclatural expression of the relationships of these Andean forms with *Pyroderus scutatus scutatus*, that systematists disagree. This bird inhabits the forests of southeastern Brazil and eastern Paraguay. It has never been recorded from the region lying between its known range and that of *P. s. masoni* of eastern Peru, and the character of the intervening country leaves little doubt that it does not occur there.

From *P. s. granadensis* of eastern Colombia, *P. s. scutatus* differs only in size. It measures, wing, 242; tail, 163; culmen, 40 mm., as compared with wing, 240; tail, 150; culmen, 35 mm., in *granadensis*. If the birds came from adjoining ranges of the Andes, no doubt would be entertained of their intergradation, but although separated in size by only a few inches, in space they are some 4000 miles apart. It is the *latter* fact which has led to their recognition as different species, rather than as representatives of one species which they unquestionably are.

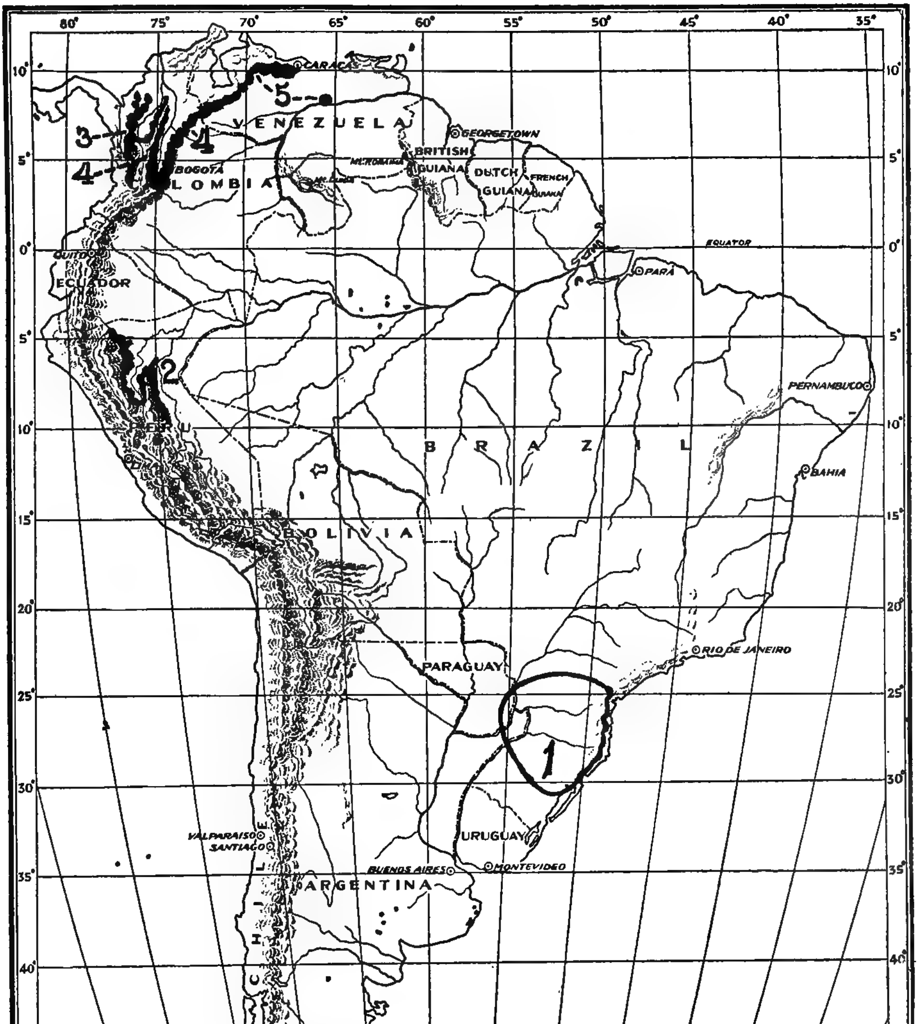
CARACAS
1
2
3
4
5
VENEZUELA
BOGOTA
COLOMBIA
GEORGETOWN
BRITISH GUIANA
DUTCH GUIANA
FRENCH GUIANA
EQUATOR
QUITO
ECUADOR
PARÁ
PERNAMBUCO
PERU
BRAZIL
BAHIA
BOLIVIA
RIO DE JANEIRO
PARAGUAY
URUGUAY
MONTEVIDEO
BUENOS AIRES
VALPARAISO
SANTIAGO
ARGENTINA
CHILE
80°
75°
70°
65°
60°
55°
50°
45°
40°
35°
30°
25°
20°
95°
90°
85°
10°
5°
0°
5°
10°
15°
20°
25°
30°
35°
40°
45°
50°
55°

Fig. 20. Known distribution of *Pyroderus scutatus*. A species inhabiting the highland forests of southeastern Brazil and eastern Paraguay and the Subtropical Zone of the Andes from Peru northward but which is unknown in the intervening area. (It has not been recorded from Ecuador.)

1. *Pyroderus scutatus scutatus*.
2. *Pyroderus scutatus masoni*.
3. *Pyroderus scutatus occidentalis*.
4. *Pyroderus scutatus granadensis*.
5. *Pyroderus scutatus orenocensis*.

In spite, therefore, of their non-intergradation, I feel that a knowledge of their relationships is best conveyed by a trinomial; and such a designation in connection with a statement of their ranges, gives far more information of this interesting case in distribution, than if the birds were treated as distinct species.

The third group contains forms so closely related that in many instances their separation would not be suggested were their ranges not known to be disconnected. Many island forms come under this category. Separated from their mainland representative by a physical barrier which prevents contact of their respective ranges, and hence geographical intergradation, they are often classed as 'species' when the differentiating characters ascribed to them are so slight as to be bridged by individual variation, specimens occurring in the range of either form which might readily be referred to the other.

It is in the treatment of the fourth group that the greatest difference of opinion is manifest. Here differentiation has been carried too far to permit of intergradation by variation, and geographical intergradation is prohibited. Such forms therefore might appear to fulfil the requirements of species, but I am convinced that in most instances to rank them as such is not only to conceal the real facts at issue but to mislead by a false statement.

An excellent illustration is furnished by that group of subtropical species which inhabit the mountains of Colombia and are represented by closely allied but well differentiated forms in the mountains of western Panama and Costa Rica. Here the Tropical Zone is an actual barrier to contact of range. Not only in the lower intervening tropical area, but in the region they inhabit, these forms do not occur below a certain level. This discontinuity of range indicates almost beyond question the former connection of the now widely separated subtropical portions of this mountain system, and is consequently a physiographic and faunal fact of high importance.

The zoölogical evidence involved can, however, be largely hidden by the use of a terminology which recognizes a purely artificial nomenclatural law as of greater importance than an attempt to express, so far as the rules of zoölogical nomenclature permit, the actual and undisputed facts in the case.

An even more striking single case is furnished by the occurrence of a form of the boreal species, *Otocoris alpestris*, on the Savanna of Bogotá. Geographically the nearest known form of this species is found in southern Mexico. Intergradation by contact for this plains-inhabiting species is obviously impossible. It is too strongly differentiated to intergrade by variation; it consequently conforms to the hard and fast definition of a species, but to refuse to recognize its close relationship to *Otocoris* by classing it as a subspecies of that group under a trinomial, is to, in part, disguise one of the most interesting and conclusive evidences of the comparatively recent invasion of boreal forms into South America.

It should be remembered that as ornithologists we are not compiling data merely for other ornithologists, nor, indeed, if this were true, would it be possible for other ornithologists always to examine the specimens on which our conclusions are based. Too often works on geographic distribution bear painful evidence of their author's unfamiliarity with the species on which his theories are raised. It is not to be expected, however, that he should be an expert in every group of animals and I feel it therefore to be the duty of the specialist to employ a nomenclature which will most clearly reveal the known facts in relationship rather than one which, for the sake of a comparatively unimportant consistency, conforms to some arbitrary standard, and emphasizes differences at the expense of resemblances.

Number of Species Included.— The following list contains only species of which, with but few exceptions,[1] we have collected specimens. It numbers 1285 species and subspecies of which forty-five are North American migrants, the remainder being doubtless permanent residents.

We have done no work on the coasts of Colombia, and it will be observed that the list includes no marine, and but few littoral species. It might have been materially enlarged by the inclusion of species recorded from Colombia, by other authors, but not secured by us. Since, however, most of these records [2] are based on native-made, dataless 'Bogota' skins, it is not believed that the faunal value of this paper would have been increased by their inclusion.

It may, however, be of interest to state that, roughly speaking, to add to our list of species those recorded by other writers but not obtained by us, would raise the total number of birds known from Colombia (including the Santa Marta region) to about 1700 species and subspecies.

In making this estimate, I find that our collection of Hummingbirds is more incomplete than that of any other family. There are several reasons for our failure to secure a larger number of the some 170-odd Hummingbirds known to inhabit Colombia.

The collecting of Hummingbirds is a special branch of field work. To what extent the wide altitudinal range of many species is governed by the blooming of flowers from which they secure their food, I am unable to say. But it is a fact that certain species are found at a given locality only when a certain flower or flowers bloom, and that at other times they are apparently wanting.

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[1] For example, the Condor, Roseate Spoonbill, and some others the identity of which was unmistakable, and under all of which the absence of specimens is acknowledged.

[2] This does not relate to the Santa Marta region, which, as elsewhere stated, calls for independent treatment, and which I understand is to be made the subject of an elaborate memoir, by Mr. W. E. C. Todd.

Unless, therefore, one specializes on Hummingbirds, learns the periods of inflorescence of their favorite trees and plants, and follows them throughout the year, he will secure only such species as chance to be brought to his attention by the flowers which happen to be in bloom at the time of his presence.

It is in this family that the native collectors are especially skillful and successful. They know the flowers most attractive to Hummingbirds, where to find them and when they bloom. These they follow at different altitudes throughout the year, and from a suitable vantage point shoot the birds with a pellet of clay from a blow-gun as they poise before a flower.

It is probable, therefore, that so far as the mere acquisition of specimens is concerned, our knowledge of Colombian Hummimgbirds is reasonably complete. In the restricted Bogotá region it is doubtful if any species of Hummimgbirds have escaped the native collector.

Brabourne and Chubb list one hundred and fifty-eight species of Hummingbirds from Colombia, and to this number we have added eleven, chiefly through our explorations in the little-known parts of the country. This makes a total of one hundred and sixty-nine species, of which we have taken only one hundred and five. Comparison of these figures with those of other families gives some most interesting results. Let us take, for example, the Formicariidæ or Ant-Thrushes. The species of this family have never especially claimed the attention of the native collector as have the Hummingbirds. They are not in demand by milliners, and their haunts and habits make them difficult to collect with a blow-gun.

Of this family, Brabourne and Chubb record seventy-five species from Colombia, and to this number we have added forty-nine, making a total of one hundred and twenty-four of which we have taken one hundred and three. Expressed in percentages, our addition to the family of Hummingbirds was only seven percent, while to the family of Ant Thrushes we added no less than sixty-five percent!

Comparison of the proportion of species in each family further shows that, while Ant-Thrushes are more difficult to collect than Hummingbirds, the specialized habits of the latter require that they shall be pursued over a more or less prolonged period; while the former, as permanent residents in one locality, may be taken as well at one time as at another. Thus of the one hundred and sixty-nine species of Hummingbirds, we took only sixty-five percent, but of the one hundred and twenty-four species of Ant-Thrushes we took eighty-three percent.

List of Families with the Number of Species by which each is Represented.

Tinamidæ	15	3	Trogonidæ	15	5
Cracidæ	15	4	Cuculidæ	11	5
Odontophoridæ	8	2	Capitonidæ	11	1
Columbidæ	31	10	Ramphastidæ	23	7
Opisthocomidæ	1		Galbulidæ	8	2
Rallidæ	16	3	Bucconidæ	19	2
Heliornithidæ	1		Picidæ	35	13
Podicipedidæ	2	2	Hylactidæ	8	4
Laridæ	2	1	Conopophagidæ	3	–
Charadriidæ	15	6	Formicariidæ	103	33
Parridæ	3	2	Dendrocolaptidæ	82	32
Œdicnemidæ	1	1	Tyrannidæ	146	74
Eurypygidæ	1	–	Pipridæ	29	5
Psophiidæ	1	–	Cotingidæ	42	21
Ibididæ	3	1	Hirundinidæ	12	7
Plataleidæ	1	1	Sylviidæ	3	1
Ciconiidæ	1	–	Troglodytidæ	40	13
Ardeidæ	14	7	Cinclidæ	1	1
Palamedeidæ	2	2	Mimidæ	4	1
Anatidæ	10	10	Turdidæ	20	9
Phalacrocoracidæ	1	1	Vireonidæ	11	6
Plotidæ	1	1	Mniotiltidæ	34	22
Cathartidæ	4	4	Motacillidæ	1	
Falconidæ	39	14	Alaudidæ	1	–
Bubonidæ	13	3	Catamblyrhynchidæ	1	1
Psittacidæ	31	14	Fringillidæ	67	30
Alcedinidæ	4	4	Cœrebidæ	28	15
Momotidæ	10	3	Procniatidæ	1	1
Caprimulgidæ	11	4	Tanagridæ	119	59
Cypselidæ	6	4	Icteridæ	33	[illegible]
Trochilidæ	105	44	Corvidæ	6	[illegible]

Total number of Families	61	– 54
Total number of Species and Subspecies	1285	– 561

New Forms Described.— In the course of our work it has been found necessary to describe as new twenty-two species, and one hundred and fifteen subspecies from Colombia. Some of these are actual discoveries, the distinctness of others has been revealed merely by the large amount of material we have brought together for comparison. I give below a list of the forms described in former volumes of this Bulletin, and also of those described in the present paper. In some instances, it will be observed, later conclusions based on larger collections, or on information received from other ornithologists, notably Dr. C. E. Hellmayr, have induced me to withdraw certain proposed forms.

As a matter of convenience, I have republished here the diagnoses of specific and subspecific characters which appeared in the papers describing these forms. These papers should be consulted when a fuller discussion of relationships is desired than is given in the present paper.

List of Species and Subspecies Described by the Author from Colombia, with a Reference to the Volume of this Bulletin in which the Original Description was published.

Bull. Amer. Mus. Nat. Hist., XXXI, 1912, pp. 139–166.
Crypturus soui caucæ
Chamæpetes goudoti sanctæ-marthæ
Leptotila verreauxi occidentalis
Pionopsitta fuertesi
Capito maculicoronatus rubrilateralis
Veniliornis nigriceps equifasciatus
Ramphocænus rufiventris griseodorsalis
Drymophila caudata striaticeps [= D. c. caudata (Scl.)]
Formicarius rufipectus carrikeri
Grallaria milleri
Grallaria alleni
Upucerthia excelsior columbiana
Synallaxis gularis rufipectus [= S. g. gularis Lafr.]
Picolaptes lacrymiger sanctæ-marthæ
Xenicopsis subalaris columbianus [= X. s. subalaris (Scl.)]
Knipolegus columbianus [= Empidochanes pœcilurus Scl.]
Muscisaxicola alpina columbiana
Myiodynastes chrysocephalus intermedius
Tyranniscus chrysops minimus
Tyranniscus nigricapillus flaviventum
Platypsaris homochrous canescens
Attila fuscicauda [= Attilla brasiliensis parambæ Hart.]
Rupicola peruviana aurea
Phæoprogne tapera immaculata
Trogolodytes solstitialis pallidipectus
Thryophilus nigricapillis connectens
Cinnicerthia olivascens infasciata [= C. olivascens Sharpe]
Planesticus fuscobrunneus
Vireosylva chivi caucæ
Basileuterus richardsoni
Spinus nigricauda
Ammodramus savannarum caucæ
Myospiza manimbe columbiana
Atlapetes flaviceps
Cyanocompsa cyanea caucæ
Diglossa cryptorhis
Diglossa gloriosissima
Sporathraupis cyanocephala margaritæ
Chlorospingus albitempora nigriceps

Bull. Amer. Mus. Nat. Hist., XXXIII, 1914, pp. 167–192.
Ortalis columbiana caucæ
Porphyriops melanops bogotensis
Fulica americana columbiana
Ixobrychus exilis bogotensis
Stenopsis cayennensis monticola
Formicarius analis connectens
Craspedoprion pacificus
Craspedoprion æquinoctialis flavus
Euscarthmus septentrionalis
Mionectes olivaceus pallidus
Camptostoma caucæ
Pitangus sulphuratus caucensis
Pheugopedius mystacalis amaurogaster
Henicorhina leucophrys brunneiceps.
Planesticus caucæ
Saltator atripennis caniceps
Myospiza cherriei
Arremonops conirostris inexpectata
Atlapetes fusco-olivasceus
Atlapetes pallidinuchus obscurior [= A. p. papallactæ Hellm.]
Cœreba mexicana caucæ
Tangara guttata tolimæ
Tangara aurulenta occidentalis
Tangara florida auriceps
Chlorospingus flavigularis marginatus
Ostinops sincipitalis neglectus
Agelaius icterocephalus bogotensis
Icterus hondæ

Bull. Amer. Mus. Nat. Hist., XXXIII, 1914, pp. 606–637.
Streptoprocne zonaris altissima
Trogonurus curucui cupreicauda
Chrysotrogon caligatus columbianus
Eubucco bourcieri occidentalis
Chrysoptilus punctigula striatigularis
Veniliornis oleaginus aureus
Thamnistes anabatinus intermedius
Myrmopagis schisticolor interior
Microrhopias grisea hondæ [= M. g. intermedia (Cab.)]
Hylopezus dives barbacoæ
Synallaxis azaræ media
Synallaxis mœsta obscura
Synallaxis gujanensis columbianus
Synallaxis rutilans caquetensis
Synallaxis pudica caucæ
Sclerurus mexicanus andinus [= S. m. obscurior Hart.]
Pipra leucocilla minor [= P. l. minimus Chapm.]
Manacus manacus interior
Manacus manacus bangsi
Pachyrhamphus castaneus saturatus
Pachyrhamphus magdalenæ
Euchlornis riefferi occidentalis
Pyroderus scutatus occidentalis
Cistothorus apolinari

Bull. Amer. Mus. Nat. Hist., XXXIV, 1915, pp. 635–662.
Crypturus soui caquetæ
Crypturus kerriæ
Tachytriorchis albicaudatus exiguus
Herpethotheres cachinnans fulvescens
Aulacorhynchus albivitta griseigularis
Picumnus granadensis antioquensis
Conopophaga castaneiceps chocoensis
Microbates cinereiventris magdalenæ
Xiphorhynchus lachrymosus alarum
Siptornis flammulata quindiana
Automolus nigricauda saturatus
Manacus vitellinus milleri
Phyllomyias griseiceps caucæ
Habrura pectoralis bogotensis
Microcerculus squamulatus antioquensis
Polioptila livida daguæ
Sporophila aurita murallæ
Catamenia analoides schistaceifrons
Phrygilus unicolor grandis
Cyanerpes cyaneus pacificus
Iridosornis dubusia ignicapillus
Iridosornis dubusia cæruleoventris
Cacicus uropygialis pacificus
Amblycercus holosericeus flavirostris
Molothrus bonariensis æquatorialis

Bull. Amer. Mus. Nat. Hist., XXXIV, 1915, pp. 363–388.
Rhynchortyx cinctus australis
Chæmepelia rufipennis caucæ
Leptotila rufaxilla pallidipectus
Asio flammeus bogotensis
Cerchneis sparveria caucæ
Pyrrhura melanura pacifica
Psittacula conspicillata caucæ
Curucujus massena australis
Andigena nigrirostris occidentalis
Chloronerpes rubiginosus buenavistæ

List of Species and Subspecies Described in this Bulletin.

Zenaida ruficauda antioquiæ
Phœthornis striigularis subrufescens
Helianthea cœligena ferruginea
Vestipedes paramillo
Brachygalba fulviventris caquetæ
Pittasoma harterti
Grallaria guatimalensis chocoensis
Troglodytes musculus neglectus
Henicorhina prostheleuca albilateralis
Cyclarhis flavipectus parvus
Pseudochloris citrina antioquiæ

North American Migrants.— During the course of our work in Colombia, we have collected specimens of forty-five species of birds which visit North America in summer, and which were apparently wintering in Colombia.

Twelve of these are water-birds of which nine are shore-birds; while of the thirty-three land-birds fourteen are Warblers. Of the whole number only one, the Western Wood Pewee, is a bird of the western United States; two, Grinnell's Water-Thrush and the Dickcissel, are birds of the interior of North America, while most of the remaining species are birds of the Atlantic slope.

Our dates of capture are, as a rule, during the season when the species might be expected to occur. We have, however, two Barn Swallows, one collected on the Bogotá Savanna, May 13, 1914, and a second taken at Quibdó, August 20, 1912. The first date is a month later than the species reaches the altitude of New York; the second is more than a month earlier than that of the final departure of the species from the same latitude.

So far as our observations go, they indicate that the range in Colombia of these winter visitants from North America is not confined by the zonal boundaries which exercise so strong an influence over the distribution of permanently resident species. The Yellow-billed Cuckoo, Olive-backed Thrush, Yellow Warbler, Blackburnian Warbler, Mourning Warbler, and Rose-breasted Grosbeak all range from the Tropical to the Temperate Zone; the Black-and-White Warbler, Golden-winged Warbler, Grinnell's Water-Thrush, Wilson's Warbler and Redstart were taken in both the Tropical and Subtropical Zones.

Faunal boundaries are also disregarded. Nor does the land connections between northwestern Colombia and Central America exert any very evident influence on the distribution of North American migrants in Colombia. The Bay-breasted Warbler was common in the Chocó region and lower Cauca-Magdalena Fauna, and was not found east of the Eastern Andes; but, with this exception, migrants appeared to be as common in the Eastern Andes as in the Western or Central Andes. Ten of the fourteen Warblers taken, for example, were collected on the eastern slope of the Eastern Andes.

There is, therefore, no indication that the Isthmus of Panama is a causeway over which North American migrants enter South America. Indeed, so far as Colombia is concerned, Dr. Allen's paper on the North American migrants found in the Santa Marta region (The Auk, XVII, 1900, pp. 363–367) suggests that this mountain promontory is the port of entry.

List of North American Migrants.

Porzana carolina
Charadrius dominicus dominicus
Ægialites semipalmata
Totanus melanoleucus
" flavipes
Helodromas solitarius
Actitis macularia
Tringa minutilla
Pisobia maculata
Gallinago delicata

Querquedula discors
Marila affinis
Circus hudsonius
Buteo platypterus
Elanoides forficatus
Coccyzus americanus americanus
Empidonax virescens
“ trailli alnorum
Myiochanes virens
“ richardsoni
Myiarchus crinitus
Tyrannus tyrannus
Riparia riparia
Hirundo erythrogaster
Hylocichla aliciæ aliciæ
“ ustulata swainsoni
Vireo flavifrons
Mniotilta varia
Protonotaria citrea
Vermivora chrysoptera
“ peregrina
Dendroica æstiva æstiva
“ cærulea
“ fusca
“ castanea
“ striata
Oporornis philadelphia
Seiurus noveboracensis noveboracensis
“ “ notabilis
Wilsonia canadensis
Setophaga ruticilla
Zamelodia ludoviciana
Spiza americana
Piranga rubra rubra
Icterus spurius

Sequence of Localities Cited.— The specimens collected by us are listed by localities under their respective species. The localities are usually cited from the west southward, thence eastward. Thus the first station mentioned for Tropical Zone species of general distribution, is in the Atrato or San Juan Valleys, and this in turn is followed by other places on the Pacific coast southward to Barbacoas. Localities in the Cauca and Magdalena Valleys, and at the eastern base of the Andes are then listed in the order named. Localities in the upper life-zones are treated in a similar manner. Those in the Western Andes precede those in the Central Andes which, in turn, are named before those of the Eastern Andes.

References.— Aside from a reference to the original description, with its type-locality,[1] I have restricted my quotations to papers on Colombian ornithology, and from them I have selected only such records as, in my opinion, were of value in definitely defining the boundaries of a bird's range.

Under this ruling, most ‘Bogotá’ references, for example, are excluded, the zonal and faunal diversity of the Bogotá region making records from it generally useless for distributional purposes.

Records from the Santa Marta region are, as a rule, quoted only from Dr. Allen's paper (1900) which contains references to the publications of earlier authors on the bird-life of the Santa Marta district.

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[1] Where circumstances seemed to warrant the step, I have, in some instances, suggested a type-locality for species described from unknown or indefinite localities.

In other cases, where subsequent authors have proposed "Colombia" as a type-locality, I have taken the liberty to add the name of a Station where the species is known to occur. With a single species represented in Colombia by as many as five races, the proposed addition of "Colombia" to the original description may still leave uncertain the proper application of the name concerned.

English Names.— Vernacular names do not exist for most of the species treated; in a work of this character it did not seem desirable to use what may be called 'machine-made' ones, and I have felt that the common names given with the family-headings will supply all the information in regard to the general relationships of the species treated that is likely to be required.

Color Terms.— Ridgway's 'Color Standards and Color Nomenclature' (Published by the Author, Washington, D. C., 1912) has been adopted in this work.

DISTRIBUTIONAL LIST OF SPECIES AND SUBSPECIES.

ORDER **TINAMIFORMES.**

FAMILY TINAMIDÆ. TINAMOUS.

(4)[1] **Tinamus tao** *Temm.*

Tinamus tao TEMM., Pig. et Gallin., III, 1815, pp. 569, 749 (Pará, Brazil).

One was shot by Fuertes in the dense subtropical forest of the Western Andes.

San Antonio, 1 (Fuertes).

(7) **Tinamus major ruficeps** *Scl. & Salv.*

Tinamus ruficeps SCL. & SALV., Nomen. Av. Neotr., 1873, p. 162 (Rio Napo, Ecuador); P. Z. S., 1879, p. 548 (Remedios); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 124 (Cacagualito).

Inhabits the Tropical Zone of the lower Cauca and lower Magdalena. Study of our forty specimens of this group from northern South America and Central America, convinces me that the various species which have been described from this area are representative, intergrading, geographic races of one species. None of the characters assigned to these forms proves to be of true specific value. Color, pattern of marking, and length of crest are all shown by our series to vary with locality, and, when the material is adequate, it indicates that the various forms merge into those which, geographically, are nearest to them.

Of *T. m. ruficeps* we have, unfortunately, only one specimen which can be considered as approximately topotypical, a male collected by Miller at La Morelia. It differs from other Colombian specimens, which I refer to this race, in having the inner wing-quills and upperparts more heavily barred, but in this respect it is matched by specimens of *castaneiceps* from the Atrato. The crown is brighter than in five Antioquia specimens but agrees in color with that of a bird from Santa Marta.

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[1] The numbers in parentheses preceding each species are those of Brabourne and Chubb's 'Birds of South America.' When this number is followed by a letter, it indicates that the species in question is not contained in Brabourne and Chubb's work.

Four specimens from near the foot of Mt. Duida at the head of the Orinoco, have the crown of the same bright Kaiser-brown as in the La Morelia specimens, and in one there is a noticeable lengthening of the feathers of the occiput; but the upperparts and inner wing-quills are less heavily barred; in the latter character these birds resemble the Antioquia and Santa Marta specimens, and show an obvious approach toward three Guiana specimens of true *major* (Gmel.) (= *subscristatus* Cab.) which have the upperparts with fewer bars than in any other of our specimens.

One of these Guiana specimens (Potaro River, Aug. 5) has the front half of the crown sooty, the occiput chestnut with black markings. The occipital crest is slightly developed. In another (no data) the forehead only is sooty, the remainder of the crown and occiput being Kaiser-brown, as in *ruficeps*. The occipital crest is somewhat more evident than in the preceding specimen. In the third specimen the crest is intermediate in color between that of the two just described, and the occipital plumes are about as long as in the Guiana specimen without data.

While, as above stated, a Santa Marta specimen has the crown of the same color as in the La Morelia specimen of *ruficeps*, five examples from Puerto Valdivia, on the lower Cauca in Antioquia, have the crown nearly as dark as in Panama specimens of *castaneiceps*, but there is only the slightest indication of black markings. In one of these birds the ear-coverts are of about the same color as the crown; in the others they are more dusky. I regard these Puerto Valdivia birds as intermediate between *ruficeps* and *castaneiceps;* though if the former is typically represented by the Morelia bird, the Antioquia as well as the Santa Marta specimens are paler and less heavily barred above than either. In brief, the conclusions reached by the examination of our specimens may be summarized as follows:

1. *Tinamus major major* (Gmel.). Type-locality, Cayenne.

Char.— Upperparts and inner wing-quills comparatively unbarred; forehead and sometimes crown, sooty; occipital crest small.

Specimens examined.— *Guiana:* Potaro River, 2; Guiana, 1.

2. *Tinamus major ruficeps* Scl. & Salv. Type-locality, Rio Napo, Ecuador.

Char.— Crown wholly Kaiser-brown, ear-coverts the same; occipital crest not evident; upperparts and inner wing-quills well barred.

Specimens examined.— *Venezuela:* near foot of Mt. Duida, 4; *Colombia:* La Morelia, 1; Santa Marta, 1; Puerto Valdivia, 5.

3. *Tinamus major castaneiceps* Salvad. Type-locality, Chiriqui.

Char.— Crown chestnut finely barred with black, becoming sooty toward the western and northern, and developing an occipital crest toward the southern part of its range.

Specimens examined.— *Panama:* Canal Zone, 2; Tapaliza, 2; Tacarcuna, 2. *Colombia:* R. Salaqui, 1; R. Atrato, 1; Andagueda, 1; Baudo, 1.

4. *Tinamus major latifrons* Salvad. Type-locality, Balzar Mts., Ecuador.

Char.— Crown wholly or largely sooty black; occipital crest well-developed.

Specimens examined.— Barbacoas, 2.

5. *Tinamus major fuscipennis* Salvad. Type-locality, Escondido River, Nicaragua.

Char.— Crown largely or wholly sooty black; no occipital crest.

Specimens examined. —*Nicaragua:* Pena Blanca, 1; Rio Grande, 2; Chontales, 2; Matagalpa, 1; San Rafael del Norte, 2; Rio Tuma, 4.

In default of specimens of *robustus* I am unable to determine whether *fuscipennis* is separable from that form. The close relation between *fuscipennis* and *castaneiceps* is shown by the occurrence of a virtually typical specimen of the former in the Canal Zone and by Salvadori's reference of a specimen from Veragua, the type region of *castaneiceps,* to *fuscipennis!*

Of '*Tinamus serratus*' (Spix) I have seen no specimen.

'*Tinamus solitarius*' (Vieill.) is obviously only a large race of *T. major.* I have, however, but one specimen.

(8) **Tinamus major castaneiceps** *Salvad.*

Tinamus castaneiceps SALVAD., Cat. Bds. B. M., XXVII, 1895, p. 507, pl. vi (Chiriqui).

Tinamus major CASS., Proc. Acad. N. S. Phila., 1860, p. 195 (R. Truando).

Inhabits the Tropical Zone of the Pacific Coast, evidently intergrading at the south with *T. m. latifrons* and at the north with *T. m. fuscipennis.* Colombian specimens have the feathers of the occiput decidedly longer than those from the Panama Canal Zone and thus approach *latifrons* in this respect. This character first appears in specimens from Tacarcuna in eastern Panama, but is more pronounced in those from the Atrato.

A specimen collected by the Shiras Expedition, near Gatun, in the Canal Zone, has the crown sooty black with only a trace of ochraceous. It can be exactly matched by specimens of *T. m. fuscipennis* from Nicaragua (if that race be valid), which has the crown apparently always sooty, with sometimes traces of ochraceous.

R. Salaqui, 1; R. Atrato, 1; Andagueda, 1; Baudo, 1.

(9) **Tinamus major latifrons** *Salvad.*

Tinamus latifrons SALVAD., Cat. Bds. B. M., XXVII, 1895, p. 506 (Balzar Mts., Ecuador).

I refer to this species, of which I have seen no authentic specimens, two birds collected by Richardson at Barbacoas. In general coloration and pattern of marking they can be matched by specimens from western Colombia and Panama which I identify as *T. m. ruficeps*, but they have a well-developed occipital crest, which, with the entire crown, is sooty black in one (labelled "male") and black barred with chestnut in the other (labelled "female?"). Both have the ear-coverts dusky, the cheeks, sides and back of the nape barred with or looped with black and tawny-ochraceous. This is obviously a representative form of *T. m. ruficeps* with which it nearly intergrades by individual variation alone.

Barbacoas, 2.

(12) **Nothocercus julius** (*Bonap.*).

Tinamus julius Bonap., Compt. Rend., XXXVIII, 1854, p. 663 (Colombia).

Found only in the Temperate Zone. A Laguneta specimen, which, unfortunately, is not sexed, has the back, wing-coverts, rump and upper tail-coverts conspicuously barred, and so far as comparison with faded material permits of accurate identification, appears to be essentially typical of *julius*. A specimen from the Western Andes which is labelled "female, ovaries slightly enlarged," resembles the Laguneta specimen in size and in general color, the throat being pure white, the forehead and crown hazel-chestnut, but the back, rump, wing-coverts, upper tail-coverts, flanks, and under tail-coverts are finely and almost uniformly vermiculated with black, and the ochraceous spots conspicuous on the wing-coverts and secondaries of the Laguneta bird are barely evident on the greater and median coverts.

In its absence of barring, this bird is unlike any example of *Nothocercus julius* which I have seen. It may possibly be referable to *N. nigricapillus*, with the description of which it agrees except for the absence of black and white blotches on the wings and underparts, its brown head and more reddish forehead.

Andes w. of Popayan (10,340 ft.), 1; Laguneta, 1.

(14) **Nothocercus bonapartei** (*Gray*).

Tinamus bonapartei Gray, List. B. Brit. Mus., Gall., Pt. V, 1867, p. 97 (Aragua, Ven.).

Found by us in the Subtropical Zone of the Central and Eastern Andes.

La Palma, 1; Andalucia (5000 ft.), 1; Aguadita, 1.

(16) **Crypturus cinereus** (*Gmel.*).

Tetrao cinereus Gmel., Syst. Nat., I, 1789, p. 768 (Cayenne).

Barrigon, 1.

(17) **Crypturus berlepschi** *Roths.*

Crypturus berlepschi Roths., Bull. B. O. C., VII, 1897, p. v (Cachabé, Ecuador).

Apparently not uncommon in the Tropical Zone of the Pacific Coast, though it appears not to have been before recorded from Colombia.

Baudo, 1; Nóvita, 1; Barbacoas, 1.

(22) **Crypturus soui soui** (*Herrm.*).

Tinamus soui Herrm., Tab. Aff. Anim., 1783, p. 165 (Cayenne).

Two males from Villavicencio agree with two from Surinam, and indicate that true *soui* ranges across northern South America to the eastern base of the Eastern Andes, doubtless as far south as the northern border of the Amazonian forest line, or approximately to the Rio Guaviare. Further south, in Colombia, it is replaced by *C. s. caquetæ*. Four males from Trinidad[1] are slightly larger, with larger bills than the four specimens above mentioned but agree with them in color. I have seen no Guiana females.

Villavicencio, 2 ♂♂.

(22*a*)[2] **Crypturus soui caucæ** *Chapm.*

Crypturus soui caucæ Chapm., Bull. A. M. N. H., XXXI, 1912, p. 141 (San Antonio, Col.).

Crypturus pileatus Scl. & Salv., P. Z. S., 1879, p. 548 (Cauca).

Inhabits the Tropical Zone and lower border of the Subtropical Zone in the Cauca and Magdalena Valleys. The birds from this area are difficult to determine satisfactorily. The female is very close to the female of *soui*, while the male is quite as near the male of *modestus*. Since, however, neither of these names could be applied to them, it may, for the present, at least, be advisable to use the name I have given above.

Las Lomitas, 1 ♂, 1 ♀; San Antonio, 1 ♀; Rio Frio, 2 ♂♂, 1 ♀; Puerto Valdivia,[3] 1 ♂; Malena, 1 ♀.

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[1] *Crypturus soui andrei* Brabourne & Chubb, Ann. & Mag. (8), XIV, 1914, p. 321.

[2] Species preceded by a number *and a letter* are additions to Brabourne and Chubb's 'Birds of South America.

[3] May be referable to *modestus*.

(22*b*) **Crypturus soui modestus** *Cab.*

Crypturus modestus Cab., J. f. O., 1869, p. 212 (Costa Rica).

A series of twelve males and eleven females indicates that this form ranges from Nicaragua to western Ecuador. Ecuador specimens are smaller (females average: Wing, 127 mm. as compared with 132 mm. in Nicaragua examples), but I can discover no racial differences in color in the twenty-three specimens listed below. Specimens from the Cauca and Magdalena Valleys to which I have applied the name *caucæ*, are intermediate between *modestus* and *soui*. The males resemble those of the former while the females resemble those of the latter.

A female collected by McLeannan and Galbraith on the line of the Panama R. R., and doubtless near or at Lion Hill, differs markedly in color from any of the eleven females referred to above and obviously represents *C. s. panamensis* Carriker (Ann. Car. Mus. VI, 1910, p. 379) described from that locality.

This bird has the breast and, to a lesser degree, abdominal region, deep, clear ochraceous-orange as in females of *soui*, instead of ochraceous-tawny as in *modestus*, the back rich hazel more as in some females of *mustelinus*, instead of cinnamon-brown as in *modestus*, the crown browner less slaty than in any of the females which I refer to *modestus*. Furthermore, the inner wing-quills and wing-coverts are broadly margined with deep ochraceous-orange.

A male taken by the same collectors, presumably at the same locality, is more nearly like *modestus* below but has the back lighter and browner, and the crown, as in the female, browner less slaty, than in *modestus*. I should be inclined to attribute the brownish crown of these two (Lion Hill?) specimens to fading, since both were collected about 1862, did not Carriker (*l. c.*) in describing *panamensis* from recently collected material state that the crown is without a grayish tinge.

If these specimens are typical of the form occurring on the northern slopes of the Isthmus, it seems probable that the bird which I refer to *modestus* is restricted to the southern slopes.

In addition to the Dabeiba female, the following specimens have been examined: *Nicaragua:* Quilali, 1 ♂; Chontales, 1 ♂; San Juan, 1 ♀; Rio Grande, 1 ♀. *Panama:* Boqueron, 1 ♂; El Real, R. Tuyra, 2 ♂♂, 2 ♀♀; Boca de Cupe, 2 ♀♀. *Ecuador:*[1] Esmeraldas, 3 ♂♂, 3 ♀♀; Rio de Oro, 2 ♂♂; Chone, 1 ♂, 1 ♀; Naranjo, Guayas, 1 ♂.

Dabeiba, 1 ♀.

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[1] Doubtless the form described by Brabourne and Chubb from Vaqueria, northern Ecuador, as *Crypturus soui harterti* (Ann. & Mag. 1914 (8), XIV, p. 321).

(22*c*) **Crypturus soui caquetæ** *Chapm.*

Crypturus soui caquetæ CHAPM., Bull. A. M. N. H., XXXIV, 1915, p. 635 (Florencia, Col.).

Char. subsp.— Most nearly resembling *C. s. mustelinus*, the underparts in the female largely rich ochraceous-orange, the chest chestnut, the throat usually tinged with, and sometimes wholly ochraceous, but upperparts much darker, deep chestnut-brown rather than Prout's-brown; the crown slaty black without brownish tinge; male resembling female above but not unlike male of *C. s. soui* below.

This form inhabits Amazonian Colombia.

Florencia, 2; La Morelia, 1.

(31) **Crypturus adspersus yapura** (*Spix*).

Pezus yapura SPIX, Av. Bras., II, 1825, p. 62, pl. 78 (Yapura and Solimöens).

Crypturus adspersus yapura HELLM., Abh. Akad. Wiss. München, XXII, 1906, p. 704.

Two specimens from La Morelia apparently represent this form of which I have seen no authentic specimens. On the whole they agree with a 'Bogotá' skin identified by Sclater as "*C. balstoni*."

La Morelia, 2.

(38) **Crypturus variegatus salvini** *Salvad.*

Crypturus salvini SALVAD., Cat. Bds. B. M., XXVII, 1895, p. 537 (Sarayacu, Ecuador).

A male from La Morelia, on comparison with true *variegatus*, apparently represents this form to which, faunally, it should be referred.

La Morelia, 1.

(44*a*) **Crypturus kerriæ** *Chapm.*

Crypturus kerriæ CHAPM., Bull. A. M. N. H., XXXIV, 1915, p. 636 (Baudo, Chocó, Col.).

Char. sp.— Most nearly related to *Crypturus boucardi*, but upperparts more barred and anteriorly browner; throat grayer, neck and breast blackish rather than gray, rest of underparts deeper, the breast slightly, the flanks conspicuously, barred; size smaller.

Known only from the type collected by Mrs. Kerr at Baudo.

ORDER **GALLIFORMES.**

FAMILY CRACIDÆ. CURASSOWS, GUANS, CHACHALACAS.

(74) **Crax alector** *Linn.*

Crax alector LINN., Syst. Nat., I, 1766, p. 269 (Cayenne).

An adult female was collected by O'Connell at Buena Vista. I have no topotypical specimens for comparison.

Buena Vista, 1.

(78) **Crax panamensis** *Ogilvie-Grant.*

Crax panamensis OGILVIE-GRANT, Cat. Bds. B. M., XXII, 1893, p. 479. (No type or type-locality designated; presumably Panama).

Mrs. Kerr sends two adult females from the Chocó.

Baudo, 1; Bagado, 1.

(82) **Crax alberti** *Fraser.*

Crax alberti FRASER, P. Z. S., 1850, p. 246 (Colombia); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 127 (Bonda; Naranjo; Santa Marta).

A male collected by Mrs. Kerr west of Honda at an altitude of 2000 feet.

West of Honda, 1.

(90) **Penelope montagni** (*Bonap.*).

Ortalida montagnii BONAP., Compt. Rend., XLII, 1856, p. 875 (Colombia; I suggest El Piñon, above Fusugasugá, alt. 9600 ft.).

Common in the Temperate Zone of the Central and Eastern Andes. The heavier feathering of the tarsi in this species, recalls the increase in feathering on the tarsi of certain boreal Gallinæ.

Valle de las Pappas, 2; Almaguer, 1; Santa Isabel, 6; above Subia, 4; El Piñon, 1.

(95) **Penelope ortoni** *Salv.*

Penelope ortoni SALV., Ibis, 1874, p. 325 (Pichincha, w. Ecuador).

A female of this Pacific slope species collected by Mrs. Kerr, at Baudo, is the first specimen to be recorded from Colombia. It is somewhat more bronzy above and more conspicuously margined with white below, than a female from Naranjo, western Ecuador.

Baudo, 1.

(97) **Penelope cristata** (*Linn.*).

Meleagris cristata Linn., Syst. Nat., I, 1766 p. 269 ("West Indies," *cf.* Edwards, I, pl. xiii = Cen. America?).

Penelope cristata Scl. & Salv., P. Z. S., 1879, p. 544 (Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 126 (Bonda).

Penelope æquatorialis Salvad. & Fest., Boll. Mus. Tor., XV, 1900, p. 38 (Rio Peripa, w. Ecuador).

Miller collected three specimens of this species at La Candela in the Central Andes at the head of the Magdalena River. We have also a Colombian specimen from the Chocó and one from Bonda, Santa Marta, while from Ecuador we have one from Gualea and three from Naranjo. The latter are essentially topotypical of *Penelope æquatorialis* Salvad. & Fest., but beyond being somewhat smaller, I am unable to see that they differ materially from twelve Panama specimens of *cristata,* including eight examples from Darien.

Salvadori and Festa describe *æquatorialis* as having the scapulars and wings olive-green rather than copper, as in *cristata.* But since *cristata* also has the wings externally olive-green rather than copper, it seems probable that the specimens of '*cristata*' used in comparison were not typical.

The character of coppery wings is, however, strongly shown by *Penelope perspicax* Bangs, of western Colombia, a bird which appears to be specifically distinct from *cristata.*

Chocó, 1; La Candela, 3.

Measurements.

	Sex	Wing	Tail	Tarsus	Culmen
Chiriqui, Pan.	♂	374	368	83	33.5
Panama R. R., Pan.	♂	374	345	86	35
Candela, Col.	♂	368	370	85	33.5
Gualea, Ec.	♂	355	370	87	32
Naranjo "	♂	361	345	86	32
" "	♀	355	345	83	33
" "	♀	374	336	83	33.5

(97*a*) **Penelope perspicax** *Bangs.*

Penelope perspicax Bangs, Proc. Biol. Soc. Wash., XXIV, 1911, p. 187 (San Luis, Bitaco Valley, w. Col.).

Not uncommon in the Subtropical Zone of the Western Andes and, at least, western slope of the Central Andes. Our San Antonio specimens are essentially topotypical. This species is evidently specifically distinct from *P. cristata,* indeed appears to be nearer *P. jaqúaçu* Spix (= *boliviana* Rich.). It obviously, therefore, is not the same as *Penelope æquatorialis* Salvad. & Fest. which our material shows to be inseparable from true *cristata.* The distinguishing characters of *P. perspicax* are the coppery auburn of the exposed surfaces of the inner wing-quills and the grayish lateral margins of the hindneck and foreback. In both these respects it differs markedly from *cristata;* but in the last-named character it agrees with *P. jacqúaçu.* The latter, however, has the wings olive as in *cristata,* but differs from both *cristata* and *perspicax* in the extension of the reddish brown underparts forward to the chest.

San Antonio, 2; Miraflores, 1; Salento, 1.

(98) **Penelope jacqúaçu** *Spix.*

Penelope jacqúaçu Spix, Av. Bras., II, 1825, p. 52, pl. lxviii ("in sylvis fluminis Solimöens"); Hellm., Abh. Akad. Wiss. München, XXII, 1906, p. 688.

Inhabits the Tropical Zone at the eastern base of the Eastern Andes. Our four specimens agree essentially with one from the Lower Beni and one from Porto Velho on the Madeira.

Villavicencio, 1; Florencia, 3.

(111) **Ortalis columbiana columbiana** *Hellm.*

Ortalis columbiana Hellm., Abh. Akad. Wiss. München, XXII, 1906, p. 694 (Colombia).

Common in the Tropical and Subtropical Zones of the Upper Magdalena Valley.

La Candela, 6; near San Agustin, 1; Andalucia (5000 ft.), 1; Chicoral, 1; El Alto de la Paz, 2.

(111*a*) **Ortalis columbiana caucæ** *Chapm.*

Ortalis columbiana caucæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 168 (Guengüe, Cauca Valley, Col.).

Char. subsp.—Similar to *O. c. columbiana* Hellm., but with the forehead little if any paler than the crown, the lower back, rump, flanks, crissum and under tail-coverts more strongly rufous-chestnut; feet horn color instead of red.

Found only in the Tropical Zone of the Cauca Valley and upward to the border of the Subtropical Zone.

Guengüe, 1; La Manuelita, 1; San Antonio, 2.

(112) **Ortalis guttata** (*Spix*).

Penelope guttata SPIX, Av. Bras., II, 1825, p. 55, pl. 73 ("ad flumen Solimöens").

Found by us only in Amazonian Colombia. Our specimens agree with one from Napo and another from the Rio Beni.

La Morelia, 7.

(114) **Ortalis garrula** (*Humb.*).

Phasianus garrulus HUMB., Obs. de Zool., I, 1811, p. 4 (R. Magdalena).
Ortalis garrula, ALLEN, Bull. A. M. N. H., XIII, 1900, p. 126 (Bonda).

Found only in the Lower Magdalena region.

Boca de Chimi, 1; below Banco, 1.

(116) **Pipile cumanensis** (*Jacq.*).

Crax cumanensis JACQ., Beytr. Gesch. Vögel, 1784, p. 25, pl. x (Orinoco).

La Morelia, 1.

(121) **Aburria aburri** (*Less.*).

Penelope aburri LESS., Dict. Sci. Nat., LIX, 1829, p. 191 (Bogotá).
Aburria carunculata SCL. & SALV., P. Z. S., 1879, p. 544 (Cauca; Frontino).

Inhabits the Subtropical Zone of all three ranges.

Gallera, 2; near San Agustin, 2; La Candela, 2; Andalucia (5–7000 ft.), 4.

(122) **Chamæpetes goudoti goudoti** (*Less.*).

Ortalida goudotii LESS., Man. d'Orn., II, 1828, p. 217 ("Quindiù = Quindio Trail, Central Andes).
Chamæpetes goudoti SCL. & SALV., P. Z. S., 1879, p. 544 (Retiro).
Chamæpetes goudotii HELLM., P. Z. S., 1911, p. 1207 (Tatamá Mts.).

Not uncommon in the Subtropical Zone of all three ranges; reaching upward to the Temperate Zone.

While Goudot, the discoverer of this species, is referred to by Lesson[1] as "Naturaliste à Santa-Fé de Bogotá" Goudot himself appears to have collected the specimens on which the species is based in the Quindio region of the Central Andes, since he writes:[1] "Cette espece, que l'on recontre dans les montagnes du Quindiu, se trouve dans les lieux fréquentés par les pavas aburridas. Je ne l'ai jamais recontrée ailleurs."

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[1] Dict. Sci. Nat., LIX, 1829, p. 195.

While there appears to be no difference between so-called 'Bogotá' specimens and those from Quindio, the latter rather than the former locality is evidently the type-locality and the birds below recorded from Laguneta may therefore be considered as topotypical.

Salencio, 1; San Antonio, 1; Almaguer, 1; Laguneta, 8; La Palma, 1; Andalucia (7000 ft.), 1; Choachi, 2.

FAMILY ODONTOPHORIDÆ. AMERICAN QUAILS AND PARTRIDGES.

(125*a*) **Colinus cristatus decoratus** (*Todd*).

Eupsychortyx decoratus TODD, Proc. Biol. Soc. Wash., XXX, 1917, p. 6 (Calamar).

This form is doubtless restricted to the Caribbæan Fauna. Our specimens are females or young, but Mr. W. E. Clyde Todd has loaned me two adult males from Calamar, including the type. These specimens very closely resemble three adult males from the Santa Marta district (two from Bonda) which presumably represent *Colinus cristatus littoralis* (Todd).[2] They have more black in the tertials, the crest is darker than in two of the Santa Marta specimens, but is essentially matched by the third; the throat averages more richly colored and the underparts more heavily spotted. Mr. Todd does not state how many specimens of either form he examined, nor indeed does he compare *decoratus* with *littoralis*, but the specimens at hand indicate that these proposed forms are barely separable.

From *leucopogon, decoratus* is separated by the characters to which Mr. Todd has called attention, and also by its longer crest. From *leucotis* it may be distinguished chiefly by its more richly colored throat and underparts, due to the increased chestnut area. In the male the white markings of the underparts are smaller, rounder and more clearly defined. In the female the throat is strongly tinged with rufous and more heavily streaked.

Whether intergradation between the island-inhabiting *cristatus* and the mainland forms of this group occurs, I am unable to say, but it is obvious that they are all representatives of one another.

Calamar, 1 ♂ juv., 3 ♀ ♀; Turbaco, 1 ♀.

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[1] *l. c.* and Man. d'Orn., II, 1828, p. 218.

[2] Proc. Biol. Soc. Wash., XXX, 1917, p. 6. Type from Mamotoco, three miles east of Santa Marta.

(125*b*) **Colinus cristatus leucotis** (*Gould*).

Ortyx leucotis Gould, P. Z. S., 1843, p. 133 ("Santa Fé de Bogotá" — I suggest Honda, alt. 600 ft. Magdalena River, Colombia).

Eupsychortyx leucotis Scl. & Salv., P. Z. S., 1879, p. 544 (Medellin); Robinson, Flying Trip, p. 153 (Guaduas; Honda).

This is a species of the Tropical Zone which in open country ranges upward into the Subtropical and even to the lower border of the Temperate Zone. It occurs on the western slope of the Western Andes in the arid Caldas basin, is not uncommon in the Cauca Valley and is found as far south as La Sierra south of Popayan, this marking the southern known limits of the genus. In the upper Magdalena Valley it is abundant. To the west it reaches up the Central Andes to at least 8300 ft., and to the east we have specimens from the Eastern Andes almost up to the border of the Bogotá Savanna. Quail are said to occur on the Savanna but we have not succeeded in securing specimens and cannot say whether the Savanna quail represents *leucotis* or *parvicristatus* or an intergrade between the two.

Caldas, 1; Cali, 1; La Sierra, 1; El Eden, 1; Chicoral, 4; Honda, 12; Purificacion, 1; Fusugasugá, 1; Anolaima, 1; El Carmen, Bogotá region, 1; El Alto de la Paz, 5.

(129) **Colinus cristatus parvicristatus** (*Gould*).

Ortyx parvicristatus Gould, P. Z. S., 1843, p. 106 ("Santa Fé de Bogotá"; — I suggest Fómeque, alt. 6300 ft., s. e. of Bogotá).

Through Brother Apolinar I have obtained two male specimens of this form from Fómeque some twenty miles southeast of Bogotá at an altitude of 6300 feet. A small flock of quail seen at Quetame were doubtless also of this species. The country about Villavicencio is suitable for quail but we neither saw nor heard any there. Our stay, however, was far too short to warrant an assertion of the absence of the species from this locality.

This form is readily distinguished from *leucotis* by its brown ear-coverts and unspotted breast. Whether it intergrades with *leucotis* on the Bogotá Savanna, where quail are said to occur, remains to be determined. In view, however, of the height of the mountains bordering the Savanna on the east it does not seem probable that this form actually comes in contact with *leucotis* which is doubtless the Savanna bird.

From *C. c. sonnini, parvicristatus* is distinguished chiefly by its shorter, darker crest, darker ear-coverts, grayer interscapular region, and blacker markings of the lower back and tertials.

Fómeque, 2.

(131) **Odontophorus guianensis marmoratus** (*Gould*).

Ortyx marmoratus Gould, P. Z. S., 1843, p. 107 (Bogotá).
Odontophorus marmoratus Scl. & Salv., P. Z. S., 1879, p. 545 (Remedios).

I refer to this race two specimens from the eastern base of the Eastern Andes and also two from Antioquia, though I am by no means certain that they belong to the same form, nor, in the event of their being different do I know to which one the name *marmoratus* properly belongs! The two specimens from east of the Andes have no chestnut-brown on the head; the two Antioquia specimens have the ear-coverts and sides of the head tinged with chestnut-brown and thus more nearly conform to the description of Gould's type, which may have come from the western instead of the eastern side of the Eastern Andes.

La Morelia, 1; Buena Vista, 1; Puerto Valdivia, 2.

(134.) **Odontophorus hyperythrus** *Gould.*

Odontophorus hyperythrus Gould, P. Z. S., 1857, p. 223 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 545 (Sta. Elena).

Common but elusive in the Subtropical Zone of all three ranges. It was far more often heard than seen.

Las Lomitas, 2; San Antonio, 3; Cocal, 1; Laguneta, 1; La Candela, 1; Andalucia (7000 ft.), 2.

(138) **Odontophorus parambæ** *Roths.*

Odontophorus parambæ Roths., Bull. B. O. C., VII, 1897, p. vi (Paramba, northwest Ecuador).
? *Odontophorus baliolus* Bangs, Proc. Biol. Soc. Wash., XXIII, 1910, p. 71 (Naranjito, Rio Dagua, alt. 3900 ft., w. Col.).

A Tropical Zone species which ranges from northwestern Ecuador at least to the headwaters of the Atrato. Comparison of a male from Esmeraldas, Ecuador, and a female from Barbacoas, both of which may be considered as typical, with two males respectively from the Baudo Mts. (alt. 2500 ft.) and Bagado (alt. 1000 ft.), to the eastward on the headwaters of the Atrato, with the type of *Odontophorus baliolus*, kindly loaned me by Mr. Bangs, strongly indicates the specific identity of *baliolus* with *parambæ*.

As with some other species of *Odontophorus*, the four specimens of *pa-*

rambæ above cited show much variation in color, particularly of the upperparts. The female from Barbacoas has the markings of the back and head more rufous than in the male from Esmeraldas, but it is by no means so extensively marked with this color as it is in the male from Bagado. On the other hand, the male from the Baudo Mountains is the darkest bird of the four, the rufous vermiculations being greatly reduced. This Baudo specimen is nearer the type of *baliolus,* so far as the color of the back is concerned, than it is to the male taken from Bagado, distant seventy-five miles, and in the same faunal zone. So far as the color of the upperparts is concerned, it is, I think, safe to attribute the dark color of *baliolus* to individual variation in which the rufous markings are reduced to a minimum.

Below, all five specimens are much alike, but the most richly colored of the series are the type of *baliolus* and the male from Esmeraldas. In short, the differences between *parambæ,* as it is represented by our four specimens, and the type of *baliolus,* resolve themselves into the single character of a narrow, white malar stripe which in the type of *baliolus* extends from the gape to the white breast-patch.

Three of our specimens show no trace of such a stripe, but in the highly colored male from Bagado there is a faint trace of one in the basal white markings of a few feathers, on each side of the throat. Whether this very slight indication of a white malar stripe possesses any significance or not I am unable to say, but, in any event, the material at hand, considered in relation not only to the range of color it shows, but to the localities it represents, throws strong suspicion on the specific validity of *baliolus.*

If this form could be allotted a different faunal area its slight differences might be considered of geographic value, but with specimens of *parambæ* taken both south and north of its type-locality and in the same zone, it cannot be considered a representative form, and the alternative of specific distinctness does not appear to be warranted by the facts in the case.

Bagado, 2; Baudo Mts., 2; Barbacoas, 1.

(142) **Odontophorus strophium** (*Gould*).

Ortyx (*Odontophorus*) *strophium* Gould, P. Z. S., 1843, p. 134 ("The Southern Countries of Mexico" = Colombia; *cf.* Cat. Bds. B. M., XXII, p. 442).

A male from Subia, near Bogotá, resembles Gould's plate of this species (Monog. Odont. pl. 31) but has the white spots on the underparts reduced to a few shaft-streaks on the front and sides of the breast.

Subia, 1.

(143*a*) **Rhynchortyx cinctus australis** *Chapm.*

Rhynchortyx cinctus australis Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 365 (Barbacoas, Col.).

Rhynchortyx cinctus Hellm., P. Z. S., 1911, p. 1207 (Sipi).

Char. subsp.— Similar to *R. c. cinctus* but coloration throughout darker; male with the breast slightly darker gray, the abdominal region and, particularly, the flanks and under tail-coverts, deeper ochraceous-buff; the crown, margins to the feathers of the back, markings to tertials richer, more chestnut; bars on the outer vanes of secondaries hazel rather than ochraceous-buff; female differing from the female of *cinctus* much as does the male, the richer color of the markings of the inner wing-quills being especially noticeable.

Inhabits the Tropical Zone of the Pacific coast.

Chocó, 1; Andagueda, 1; Bagado, 1; Baudo, 2; Barbacoas, 4.

Order **COLUMBIFORMES.**

Family COLUMBIDÆ. Pigeons and Doves.

(149) **Columba speciosa** *Gmel.*

Columba speciosa Gmel., Syst. Nat., I, 1788, p. 783 (Cayenne); Scl. & Salv., P. Z. S., 1879, p. 543 (Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 129 (Bonda); Hellm., P. Z. S., 1911, p. 1205 (Noanamá).

This widely distributed species is found throughout the Tropical Zone in Colombia.

Bagado, 2; Noanamá, 1; Nóvita, 1; w. of Honda, 1; Buena Vista, 1; Villavicencio, 2.

(152) **Columba rufina** *Temm. & Knip.*

Columba rufina Temm. & Knip, Pig., I, 1808–11, p. 59, pl. 24; Scl. & Salv., P. Z. S., 1879, p. 543 (Medellin); Robinson, Flying Trip, p. 153 (R. Magdalena; Guaduas); Allen, Bull. A. M. N. H., XIII, 1900, p. 129 (Bonda).

Chlorœnas rufina Cass., Proc. Acad. N. S. Phila., 1860, p. 194 (Turbo; Delta Atrato).

Abundant in the Tropical Zone and ranging upward to the Subtropical Zone. We have no specimens from the Pacific coast of Colombia but have a small series from western Ecuador.

San Antonio, 5; Cali, 3; below Miraflores, 1; Rio Frio, 1; Banco, 1; Villavicencio, 1.

(153) **Columba goodsoni** *Hart.*

Columba goodsoni Hart., Bull. B. O. C., XII, 1902, p. 42 (no type named; "S. Javier, Pambilar, and Carondelet, n. w. Ecuador," given as "Hab."); Hellm., P. Z. S., 1911, p. 1205 (Noanamá).

Apparently restricted to the Tropical Zone of the Pacific coast. Our two specimens agree with two essentially topotypical ones from Esmeraldas, Ecuador.

Buenaventura, 1; Barbacoas, 1.

(154) **Columba albilinea albilinea** *Bonap.*

Columba albilinea Bonap., Consp. Av., II, 1854, p. 51 (New Granada).
Columba albilineata Scl. & Salv., P. Z. S., 1879, p. 543 (Retiro).
Columba albilinea albilinea Hellm., P. Z. S., 1911, p. 1205 (Loma Hermosa).

Common in the Subtropical and Temperate Zones of the Western and Central Andes. Our only specimens from the Eastern Andes are 'Bogotá' skins. Specimens in fresh plumage are strongly tinged below with glaucous-purple and are therefore less vinaceous than those in a worn condition.

Paramillo, 2; San Antonio, 2; La Florida, 2; Cerro Munchique, 2; Ricaurte, 6; Almaguer, 1; Valle de las Pappas, 1; La Sierra, 1; Miraflores, 1; Salento, 1; Laguneta, 2; Sta. Elena, 4; Barro Blanco, 3; Rio Toché, 1; La Candela, 3; San Agustin, 3.

(156*a*) **Columba plumbea propinqua** *Cory.*

Columba plumbea propinqua Cory, Field Mus. Pub., X, 182, 1915, p. 295 (Moyobamba, Peru).

Two adult specimens are identified by Mr. Ridgway as *Columba plumbea propinqua.* I call attention under the succeeding species, to the fact that these specimens make the known range of *bogotensis* overlap that of *Columba plumbea* and indicate the specific distinctness of these two birds.

Four specimens from Gualea, Ecuador, have the underparts and particularly the abdominal region, the head and neck darker than in the Buena Vista birds but in other respects closely agree with them and are therefore obviously representatives of *plumbea.*[1]

Buena Vista, 2.

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[1] This form has since been described as *Œnœnas plumbea chapmani* Ridgw. (Bull. U. S. N. M., 50, VII, 1916, p. 325).

(159) **Columba subvinacea bogotensis** (*Berl. & Lev.*).

Chlorœnas plumbea subsp. n. *bogotensis* Berl. & Lev., Ornis, 1890, p. 32 (Colombia — Santa Fé de Bogotá, ex præp.).
Columba subvinacea Scl. & Salv., P. Z. S., 1879, p. 543 (Remedios).
Columba plumbea bogotensis Auct.

A series of twenty-five specimens covering the range of *Columba subvinacea berlepschi* from western Ecuador to eastern Panama, and of *C. s. bogotensis* from the Western Andes to La Morelia at the eastern base of the Eastern Andes, all represent, in my opinion, one species, of which the Pacific coast specimens are referable to *Columba subvinacea berlepschi* Hart., while those from the Subtropical Zone of the Western and Central Andes and Tropical Zone at the eastern base of the Eastern Andes are either intergrades or typical of the bird which is currently known as "*Columba plumbea bogotensis*." That this bird is not a form of *plumbea* is apparently proven by the occurrence of a race of *plumbea*, at Buena Vista to the north of, and in the same zone as La Morelia, whence we have a specimen of *bogotensis*. That *bogotensis* is a representative of, and probably intergrades with *subvinacea berlepschi*, is indicated by two specimens from San Antonio in the Western Andes which were doubtless taken on the Pacific slope of the range, and one from above Nóvita in the same range. These birds, as the appended table of measurements shows, are intermediate in size between *berlepschi* and *bogotensis*. In color the two San Antonio specimens are nearer to *berlepschi* than they are to *bogotensis*, as that species is represented by specimens from La Candela on the Magdalena slope of the Central Andes; but the Nóvita specimen agrees absolutely in color with average specimens of *bogotensis*. Seven specimens from the Central Andes are essentially alike and may be considered typical of *bogotensis*. Compared with fourteen specimens of *berlepschi* from the Pacific coast (Naranjo, Guaymas, Ecuador, to Tacarcuna, eastern Panama), *bogotensis* is much larger, the underparts less cinnamomeus and less uniformly colored, the purplish vinaceous of the back being more or less mixed with olive; the wings are more olive externally and somewhat less rufous internally.

Intergradation between these two forms appears to occur at the northern end of the Western Andes where their ranges actually meet. With an appreciable increase in size (see table of measurements) and approach toward *bogotensis* in color, *berlepschi* reaches the summit of the Western Andes at San Antonio, above Cali. Its further eastward extension here is prohibited by the lack of forest growth and specimens from the western slope of the

Central Andes above the Cauca Valley are true *bogotensis*. To the north, however, along the Western Andes the Tropical Zone forest of the Pacific slope and Subtropical Zone forests of the summit or both slopes, are continuous, and thus permit the ranges of the two forms to come into actual contact.

A specimen from an altitude of 2500 feet, on the western slope of the Western Andes above Nóvita, like the San Antonio specimens, shows an approach in size toward *bogotensis*, but in color it goes beyond them being in fact so exactly like specimens of *bogotensis* from the Central Andes that I am wholly unable to discover any color difference between them. This specimen which has been examined by Mr. Ridgway in the course of his studies of Central American birds, is labelled by him *C. s. berlepschi*, but to my mind it is as satisfactory an intermediate between that race and *bogotensis* as a systematic ornithologist could well ask for.

Continuing northward we have three specimens of *bogotensis* from La Frijolera on the lower Cauca River, thus bringing the range of this race to the western slope of the northern Central Andes.

In Colombia, therefore, *bogotensis* appears to range from the northern end of the Western Andes, where it intergrades with *berlepschi*, through the Subtropical Zone of the Central and Eastern Andes to the Tropical Zone at the eastern base of the last-named range. From this point it evidently extends southward to Bolivia whence we have two specimens which seem to be inseparable from Colombian examples.

This case is particularly interesting since it throws some light on the way in which numerous Amazonian species may have reached the Pacific coast. It is true that we have no specimens from the Temperate Zone, but in a wide-ranging, non-sedentary, adaptable species such as this, it is evident that the narrow strip which in places separates the Subtropical Zone of one slope from the same zone on the opposite slope of a range, is not a sufficient barrier to extension of range.

Although no form of *subvinacea* is known from extreme northern Colombia where the arid coastal zone does not offer a favorable habitat for this species, the species appears again in northwestern Venezuela as *Columba subvinacea zuliæ* (Cory, Field Mus. Pub., X, 182, 1915, p. 295) and in extreme northeastern Venezuela as *Columba subvinacea peninsularis* (Chapman, Bull. A. M. N. H., XXXIV, 1915, p. 366).

La Frijolera, 3; Salento, 4; La Candela, 3; La Morelia, 1.

Measurements.

			Wing	Tail	Tarsus	Culmen
C. s. berlepschi,	Buenaventura, Col.	♂	148	123	20	12
“ “ “	Esmeraldas, Ec.	♂	149	117	20	12
“ “ “	Nóvita Trail, Col.	♂	160	131	21	13.5
“ “ “	San Antonio “	♂	160	130	21	12.5
“ “ *bogotensis,*	Salento “	♂	168	141	21	12
“ “ “	“ “	♂	173	142	23	13.5
“ “ “	La Candela “	♂	169	147	23	14
“ “ “	La Morelia “	♂	163	120	22	13
C. s. berlepschi,	Naranjo, Ec.	♀	145	120	20.5	13
“ “ “	San Antonio, Col.	♀	150	126	21	12
“ “ *bogotensis,*	La Frijolera “	♀	165	136	23	13.5
“ “ “	Salento “	♀	165	138	22.5	14
“ “ “	“ “	♀	172	139	23	13
“ “ “	La Candela “	♀	175	138	23	14
“ “ “	“ “	♀	175	138	23	15

(160) **Columba subvinacea berlepschi** *Hart.*

Columba subvinacea berlepschi HART., Nov. Zool., V, 1898, p. 504 (Paramba, n. w. Ecuador).

Inhabits the Pacific coast region from southern Ecuador to eastern Panama. Specimens from the Western Andes show an evident approach both in size and in color to *C. s. bogotensis,* as remarked under that species, but, doubtless extending up the western side of the Atrato Valley and Baudo range, *berlepschi* has reached eastern Panama without departing from the typical form.

Buenaventura, 1; San Antonio, 2 (intermediates); Western Andes (2500 ft.), above Nóvita, 1 (intermediate).

(162) **Zenaida auriculata** (*Des Murs*).

Peristera auriculata DES MURS, Gay's Hist. Chile, I, 1847, p. 381, pl. 6 (Chile).

Found by us only in the Cauca Valley where it inhabits the savannas and plantations. Our specimens are somewhat smaller (male, wing 136–143 mm.) than one from Chile; have the tail more graduated and the central feathers more pointed.

Cali, 4; La Manuelita, 1.

(163) **Zenaida ruficauda ruficauda** *Bonap.*

Zenaida ruficauda Bonap., Consp. Av., II, 1854, p. 83 (New Grenada).
Zenaida bogotensis Lawr., Auk, II, 1885, p. 358 (Bogotá; type in Am. Mus.).

Two forms of this species occur in the Bogotá region. One occurs in the semi-arid Tropical Zone of the upper Magdalena Valley and doubtless extends well up the flanks of the mountains; the other is a bird of the Temperate Zone and is common on the Bogotá Savanna. While they differ in color, their most tangible characters are in size; and the lack of measurements with the original description have made it difficult to determine from that alone, to which of the 'Bogotá' forms Bonaparte's name might be properly applied. Fortunately his type is contained in the British Museum and at my request Mr. Charles Chubb has kindly supplied me with measurements of it and two topotypes. These show that Bonaparte named the larger Temperate Zone form (later described by Lawrence as *Zenaida bogotensis*), and we may therefore without question accept Mr. Ridgway's name of *robinsoni* for the small race of the Tropical Zone.

Bogotá Savanna, 9.

(163*a*) **Zenaida ruficauda robinsoni** *Ridgw.*

Zenaida ruficauda robinsoni Ridgw., Proc. Biol. Soc. Wash., XXVIII, 1915, p. 107 (Honda, Col.).

Apparently restricted to the Tropical Zone in the Magdalena Valley and eastward. In addition to the specimens listed below, we have also two specimens from the lower Orinoco region (Maripa; Cd. Bolivar, Venez.). From *Zenaida ruficauda ruficauda,* of the Temperate Zone of the Eastern Andes, this race is distinguished by its smaller size and paler coloration.

Honda, 2; Chicoral, 2.

(163*b*) **Zenaida ruficauda antioquiæ** subsp. nov.

Char. subsp.— Agreeing in the color of the upperparts with *Zenaida r. ruficauda* Bonap. but with the underparts, especially posteriorly, much more vinaceous, the abdominal region and lower tail-coverts being vinaceous-fawn rather than orange-cinnamon as in *ruficauda;* size smaller. Resembling *Z. r. robinsoni* in the color of the underparts, but upperparts much darker and size larger.

Type.— No. 132,926. Am. Mus. Nat. Hist., ♂ ad., Barro Blanco (7200 ft.), Cen. Andes, Antioquia; Nov. 28, 1914; Miller & Boyle.

This race is probably restricted to the cleared or unforested portions of the Temperate Zone at the northern end of the Central Andes in Antioquia.

Here it appears to be a zonal representative of *Z. r. robinsoni*, the tropical or base form, which in the Temperate Zone of the Eastern Andes is represented by *Z. r. ruficauda.*

Barro Blanco, 2.

Measurements of Males.

		Wing	Tail	Tarsus	Culmen
Z. r. antioquiæ,	Barro Blanco, Col.	146	104	23	17
" " "	" "	148.5	101	20.5	15
Z. r. ruficauda,	Bogotá Savanna, Col.	157	115	23.5	
" " "	" " "	154	111	22	14
" " "	'Bogotá' (Type of *bogotensis*)	158	108	22	14.5
" " "	New Grenada (Type of *ruficauda*) [1]	161	104	25	16
Z. r. robinsoni,	Honda, Col.	136.5	92	20.5	15
" " "	" "	132.5	89	21	15.5

(174*a*) **Chæmepelia passerina albivitta** *Bonap.*

Ch[amæpelia] albivitta Bonap., Consp. Av., II, 1854, p. 77 (Carthagena, Col.).

Chamæpelia granatina Cass., Proc. Acad. N. S., 1860, p. 195 (Carthagena).

Chamæpelia passerina Wyatt, Ibis, 1871, p. 383 (Santa Marta).

Columbigallina passerina Robinson, Flying Trip, p. 154 (Barranquilla).

Columbigallina passerina granatina Allen, Bull. A. M. N. H., XIII, 1900, p. 128 (Bonda; Santa Marta).

This pale form is doubtless restricted to the arid coastal zone. Our specimens are essentially topotypical.

La Playa, 6.

(174*b*) **Chæmepelia passerina parvula** *Todd.*

Chœmepelia passerina parvula Todd, Ann. Carn. Mus., VIII, 1913, p. 544 (Honda, Col.).

Columbigallina passerina Robinson, Flying Trip, p. 154 (Honda; Guaduas).

Common in the Tropical Zone of the upper Magdalena Valley. The small size of a young female from Quetame induces me to refer it provisionally to this form. Probably our very inadequate series of this and the succeeding representatives of this genus may be attributed to their abundance! This inspired the belief that specimens could be collected when the search for rarer birds was less pressing — a time which never came.

Our series of the forms of *passerina* is therefore not large enough to warrant a review of Mr. Todd's work on Colombian Ground Doves, and I therefore accept his identification of our material most of which he used in the preparation of his excellent monograph of the genus *Chæmepelia.*

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[1] Measurements from type in the British Museum by Chas. Chubb.

Honda, 4; Chicoral, 4; Quetame, 1.

(174*c*) **Chæmepelia passerina nana** *Todd.*

Chæmepelia passerina nana TODD, Ann. Carn. Mus., VIII, 1913, p. 546 (Jimenez, Upper Dagua, Col.).

Abundant in the Cauca Valley and in the arid basin of the upper Dagua; ranging upward to the lower border of the Subtropical Zone.

Caldas, 2; La Manuelita, 1.

(176*a*) **Chæmepelia minuta elæodes** *Todd.*

Chæmepelia minuta elæodes TODD, Ann. Carn. Mus., VIII, 1913, p. 578 (Buenos Aires, Costa Rica).

Chamæpelia amazilia WYATT, Ibis, 1871, p. 383 (Ocaña; Herradura).

An adult male from the lower Atrato region agrees essentially with a Costa Rica specimen.

Dabeiba, 1.

(180) **Chæmepelia rufipennis rufipennis** (*Bonap.*).

Talpacotia rufipennis BONAP., Consp. Av., II, 1854, p. 79 (Carthagena, Col.).

Chamæpelia rufipennis WYATT, Ibis, 1871, p. 383 (Ocaña, Bucaramanga, Magdalena Valley); SCL. & SALV., P. Z. S., 1879, p. 544 (Medellin); ROBINSON, Flying Trip, p. 154 (Barranquilla; Honda).

Columbigallina rufipennis ALLEN, Bull. A. M. N. H., XIII, 1900, p. 128 (Bonda; Masinga Vieja; Santa Marta; Cienaga).

All our specimens from the Magdalena Valley are males; but the faunal affinities of this region as well as the characters of the specimens indicate that they should be referred to this race.

Calamar, 2; Malena, 1; Chicoral, 1; El Alto de la Paz, 1.

19

(180*a*) **Chæmepelia rufipennis caucæ** *Chapm.*

Chæmepelia rufipennis caucæ CHAPM., Bull. A. M. N. H., XXXIV, 1915, p. 367 (La Manuelita, Cauca Valley, Col.).

Char. subsp.— Male not certainly distinguishable from the male of *C. r. rufipennis* but averaging paler below and browner above; female conspicuously different from the female of that race; the upperparts rather light Saccordo's umber, practically without trace of vinaceous, except upon the rump and upper tail-coverts where it is much less pronounced than in *C. r. rufipennis;* the crown usually concolor with the back; the rectrices, upper wing-coverts and inner wing-feathers externally, the underparts, particularly the flanks and lower tail-coverts, with less vinaceous-tawny than in *C. r. rufipennis.*

Our specimens of this well-marked race are all from the Cauca Valley and the surrounding mountain slopes up to the lower border of the Subtropical Zone. This appears to form the southern limit of the range of this species in western South America.

Cali, 5; La Manuelita, 2; below Miraflores, 3; Rio Frio, 1.

(184) **Claravis pretiosa livida** *Bangs.*

Claravis pretiosa livida BANGS, Proc. Biol. Soc. Wash., XVIII, 1905, p. 153 (Rio Cauca, Col.).

Peristera cinerea SCL. & SALV., P. Z. S., 1879, p. 544 (Remedios).

Claravis pretiosa ALLEN, Bull. A. M. N. H., XIII, 1900, p. 128 (Minca; Cacagualito; Mamatoca; Santa Marta).

Apparently distributed throughout the Tropical Zone. It is common in the Cauca Valley though we did not happen to collect specimens there. The characters on which this race is based appear to be more pronounced in the female than in the male.

Dabeiba, 1; Noanamá, 1; Los Cisneros, 2; Ricaurte, 1; Puerto Valdivia, 3; Enconosa, 1; Villavicencio, 4; Florencia, 1.

2.1

(189) **Leptotila verreauxi verreauxi** *Bonap.*

Leptoptila verreauxi BONAP., Consp. Av., II, 1854, p. 73 (New Grenada); CASS., Proc. Acad. N. S. Phila., 1860, p. 195 (Turbo; R. Truando); WYATT, Ibis, 1871, p. 383 (Ocaña); SCL. & SALV., P. Z. S., 1879, p. 544 (Retiro; Medellin); ALLEN Bull. A. M. N. H., XIII, 1900, p. 128 (Minca; Bonda; Santa Marta).

Common in the Tropical Zone in the entire Magdalena Valley region, northward to the coast and westward apparently to the lower Atrato region. Doubtless it occurs at the eastern base of the Eastern Andes, but we did not obtain it there.

La Candela, 2; Andalucia (w. slope 3000 ft.), 2; El Carmen, 1; El Alto de la Paz, 1; Chicoral, 2; Honda, 3; Remolino, 2; Algodonal, 1; Calamar, 3; La Playa, 2; R. Sinu, 1; Puerto Valdivia, 1; Peque, 1.

(189*a*) **Leptotila verreauxi occidentalis** *Chapm.*

Leptotila verreauxi occidentalis Chapm., Bull. A. M. N. H., XXXI, 1912, p. 142 (San Antonio, Col.).

Char. subsp.— Most closely allied to *Leptotila verreauxi verreauxi* Bp. but upperparts, wings and tail externally much grayer, more olivaceous, forehead whiter, reflections of crown much less pronounced and obscured by grayish, underparts paler, less vinaceous; flanks somewhat grayer; under tail-coverts averaging more buffy.

Common about the border of forest in the Subtropical Zone of the Western Andes and western slope of the Central Andes above the Cauca Valley and southward. It is interesting to observe that while this form inhabits the Subtropical Zone, *L. v. verreauxi* is mainly a species of the Tropical Zone.

Comparison of twenty specimens from western Colombia with twenty-six specimens of *L. v. verreauxi* from Trinidad, Venezuela, Santa Marta, 'Bogotá,' and the Magdalena Valley in Colombia, Panama, Chiriqui and Costa Rica, shows that the differences between the two forms expressed in the preceding diagnosis are constant, and are not bridged by individual or seasonal variation. While a specimen labelled "Bogotá," probably the type-locality of *verreauxi*, is as richly colored as any bird in the series; two specimens from Chicoral Bridge in the foothills of the eastern slopes of the Central Andes, opposite Giradot, and a third from Puerto Berrio on the Magdalena River, show some approach toward the Cauca form.

Caldas, 1; San Antonio, 4; Gallera, 1; Cerro Munchique, 5; Miraflores, 6; Salento, 2.

(191) **Leptotila rufaxilla dubusi** *Bonap.*

Leptoptila dubusi Bonap., Consp. Av., III, 1854, p. 74 (Rio Napo).

Leptotila rufaxilla dubusi Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 369.

Char. subsp.— Most nearly resembling *L. r. hellmayri* but upperparts averaging more olive, less cinnamomeus, front and sides of the throat and postocular region with less pinkish cinnamon; white of throat more restricted, confined largely to the chin; forehead darker; gull-gray of crown less extended posteriorly, reaching little if any behind the eyes; wings and tail shorter. Easily distinguished from *L. r. rufaxilla* by its more cinnamon upperparts, paler crown, deeper vinaceous breast, small white throat area, and smaller size.

This is the form of Amazonian Colombia whence it extends southward into Ecuador and eastward to at least the upper Orinoco.

La Manuelita, 9; Florencia, 1.

(191*a*) **Leptotila rufaxilla pallidipectus** *Chapm.*

Leptotila rufaxilla pallidipectus Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 369 (Buena Vista, Col.).

Char. subsp.— Differs from all the brown forms of this species in its much paler, buff-tinted (vinaceous-buff) breast, paler light brownish olive back, practically without purplish reflections; more grayish, less iridescent occiput and nape; the gull-gray of crown as restricted as in *L. r. dubusi*, the throat as extensively white as in *hellmayri*; agreeing in size with the former.

Found by us only at and above Villavicencio. Doubtless it extends southward to the northern border of the Amazonian forests along the Guaviare River, beyond which it is replaced by *L. r. dubusi.*

Buena Vista, 1; Villavicencio, 2.

(191*b*) **Leptotila plumbeiceps** *Scl. & Salv.*

Leptoptila plumbeiceps Scl. & Salv., P. Z. S., 1868, p. 59 (Vera Paz, Guatemala).

A not common inhabitant of the Tropical Zone in the Cauca Valley and at Caldas on the western slope of the Western Andes.

This species, described from Guatemala, appears not to have before been recorded south of Costa Rica, and one might expect specimens from Colombia to be subspecifically separable from those representing the species at the northern limits of its range. My unusually satisfactory material includes two specimens from Costa Rica, one from Nicaragua, three from Honduras, one from Central Guatemala, three from Teaba and one from Frontera, Tabasco, Mexico, and two from southern Vera Cruz. The Mexican specimen and the one from the vicinity of Coban, Guatemala, may be considered typically to represent *plumbeiceps* and from these birds the Cauca specimens differ appreciably in having the bluish gray of the crown and nape more extensive and reaching to the foreback, the auricular region and sides of the throat much paler, vinaceous-buff rather than buff or ochraceous-buff, the breast paler, and the under tail-coverts with little if any dusky external margin.

The Honduras specimens, however, are nearer the Cauca bird, the one from Nicaragua agrees with true *plumbeiceps,* while those from Costa Rica are somewhat intermediate. To separate the Cauca bird, therefore, would make it difficult to name with any exactness specimens from by far the larger part of the range of the species, to my mind an unwarranted proceeding.

Guengüe, 1; Rio Frio, 1; Las Lomitas, 2; Caldas, 1.

(200) **Leptotila pallida** *Berl. & Tacz.*

Leptotila pallida Berl. & Tacz., P. Z. S., 1883, p. 575 (Chimbo, Ecuador).

Found only in the Tropical Zone of the Pacific coast. This species has hitherto been recorded only from western Ecuador whence we have seven specimens. Comparison with a large series of *L. rufaxilla* from many localities shows no indication of intergradation with that form, the gray hind-head and nape and (in view of its humid habitat) surprisingly pale breast of *pallida* being constantly diagnostic.

Nóvita, 1; San José, 3; Barbacoas, 6.

(200*a*) **Leptotila cassini** *Lawr.*

Leptoptila cassini Lawr., Proc. Acad. N. S. Phila., 1867, p. 94 (Panama).

Inhabits the forested lower Cauca-Magdalena region. Our specimens, which agree with the type, considerably extend the range of this species which appears not to have been before recorded from South America.

Salaqui, 1; Opon, below Puerto Berrio, 1; Puerto Berrio, 2.

(202) **Osculatia purpurata** *Salv.*

Osculatia purpurata Salv., Ibis, 1878, p. 448 (Ecuador).

Apparently restricted to the Tropical Zone of the Pacific coast. Our specimens extend the known range of this beautiful dove from Ecuador northward to the headwaters of the Atrato.

Although obviously the representative of *Osculatia sapphirina* of the Tropical Zone at the eastern base of the Andes, the differences separating these two forms seem to me to be now sufficiently pronounced and positive to be considered of specific value.

La Vieja, Chocó, 3; Nóvita Trail (3000 ft.), 1; Buenavista, Nariño, 1.

(204) **Oreopeleia montana** (*Linn.*).

Columba montana Linn., Syst. Nat., I, 1758, p. 163 (Jamaica).
Geotrygon montana Allen, Bull. A. M. N. H., XIII, 1900, p. 128 (Bonda).

This wide-ranging dove inhabits both the Tropical and Subtropical Zones and appears to be distributed throughout the greater part of humid Colombia.

Las Lomitas, 4; San Antonio, 4; Puerto Valdivia, 1; La Candela, 1; Andalucia (7000 ft.), 1; Florencia, 1.

(205) **Oreopeleia veraguensis** (*Lawr.*).

Geotrygon veraguensis LAWR., Ann. Lyc. Nat. Hist. N. Y., VIII, 1866, p. 349 (Veragua).

Geotrygon veraguensis cachaviensis HART., Nov. Zool., V, 1898, p. 504 (Cachabi, Ecuador); IX, 1903, p. 603; HELLM., P. Z. S., 1911, p. 1206 (Noanamá).

Not uncommon in the Tropical Zone of the Pacific coast and lower Cauca River. Comparison of our sixteen specimens (of which five from Barbacoas may be considered as topotypical of *cachaviensis*) with the type and three Costa Rican specimens of *veraguensis* confirms Hartert's suspicion (Nov. Zool. 1898, p. 603) that his *cachaviensis* is not separable. Colombian birds average more purple above, anteriorly, and darker below, but the difference is bridged by individual variation. (Females of this species have the forehead and flanks decidedly browner than in the male).

Puerto Valdivia, 3; Baudo, 6; Andagueda, 1; San José, 1; Barbacoas, 5.

(206) **Oreopeleia bourcieri** (*Bonap.*).

Geotrygon bourcieri BONAP., Consp. Av., II, 1854, p. 71 (Valle Lloa, Ecuador); HELLM., P. Z. S., 1911, p. 1206 (Pueblo Rico).

Not uncommon in the Subtropical Zone of the Western and Central Andes, ranging upward to the lower border of the Temperate Zone, but like all terrestrial forest birds difficult to secure. Specimens from the Central Andes average more vinaceous below and more cinnamomeus above than those from the Western Andes, and thus show a slight approach toward *O. linearis linearis* of the Eastern Andes. This fact, in connection with the evident absence of *bourcieri* in that range of mountains suggests the conclusion that *linearis* is a widely differentiated representative of *bourcieri*, but this theory is disproven by the capture of a perfectly typical specimen of *linearis* at Puerto Valdivia, on the west shore of the Cauca River in Antioquia. This species is also recorded from Santa Elena in the Central Andes, near Medellin, by Sclater and Salvin.

It is somewhat surprising to find that our series of *bourcieri* from the Western Andes, rather than those from the Central Andes, agrees with Ecuador specimens. Of the latter I have six specimens from Zaruma in southern Ecuador, and one from Chunchi (alt. 7200 ft.) and a trade skin labelled "Ambato". All but the last agree with the west Colombian form, while the Ambato specimen is nearer the Central Andean form. Unfortunately I have no specimens from the type-locality, west of Quito, nor do I know whether the Ambato bird came from the eastern or western slope of the Andes. Since, however, it resembles in make and came with a collection containing specimens of *Osculatia sapphirina,* it is probably from the eastern slope. The occurrence of the species on that slope is shown by a specimen collected by Richardson at Zamora. This bird is in postjuvenal molt. So far as its adult plumage has appeared it resembles that of the west slope, gray-breasted bird, but its immaturity makes it impossible to draw satisfactory conclusions from its color. Under this theory we should have the gray-breasted form confined to the Pacific slope and extending northward into Colombia along the Western Andes; while the vinaceous-breasted bird is found on the Amazonian slope and ranges northward into Colombia along the Central Andes. The case is paralleled by the distribution in Ecuador and Colombia of *Rupicola peruviana sanguinolenta* and *R. p. aurea.*

Possibly in this slight geographic variation we have the origin of *Oreopeleia erythropareia* (Gray). Salvadori (Cat. Bds. B. M., XXI, p. 578) emphasizes the fact that the breast in this form is "brown-grey" rather than "greyish-brown," as he describes *bourcieri,* a statement which suggests that the type of *erythropareia* (which is without definite locality) is really referable to true *bourcieri.* In any event, however, I do not feel that the variations shown by our series of twenty-six specimens are sufficiently constant to warrant the recognition of two forms.

Salencio, 1; San Antonio, 4; La Florida, 1; Cocal, 1; Cerro Munchique, 1; Gallera, 1; Almaguer, 1; Miraflores, 1; El Roble, 1; Laguneta, 1; La Candela, 4.

(209) **Oreopeleia linearis linearis** (*Prev. & Knip*).

Columba linearis Prev. & Knip, Pig. et Gallin., II, 1838–43, p. 104, pl. 55 (Bogotá).
Geotrygon linearis Scl. & Salv., P. Z. S., 1879, p. 544 (Sta. Elena).

In the Eastern Andes, found by us only in the Subtropical Zone where it is not uncommon. Sclater and Salvin record (*l. c.*) this species from Sta. Elena, near Medellin, and Miller confirms this somewhat unexpected record by securing a perfectly typical specimen at Puerto Valdivia. In the comparative restriction of the bluish gray to the sides of the head, and extension of the cinnamon-vinaceous to the nape, four of our specimens (including two from Buena Vista) agree with a topotype of "*venezuelensis*" from Merida. Three young birds from Merida show that this character is due to immaturity, and indicate, in my opinion, that *venezuelensis* (which was apparently based on one specimen) is not a valid form.

Specimens from Andalucia show no approach to *bourcieri* of which we have skins from La Candela on the opposite side of the Magdalena Valley.

Puerto Valdivia, 1; Andalucia (5000–7000 ft.), 3; Fusugasugá, 1; Buena Vista, 3.

ORDER **OPISTHOCOMIFORMES.**

FAMILY OPISTHOCOMIDÆ. HOATZINS.

(212) **Opisthocomus hoazin** (*Müll.*).

Phasianus hoazin MÜLL., Syst. Nat. Suppl., 1776, p. 125 (Cayenne).

Specimens from Florencia and Villavicencio mark the extreme northwestern limit of the range of this species.

Florencia, 6; Villavicencio, 3; Barrigon, 1.

ORDER **RALLIFORMES.**

FAMILY RALLIDÆ. RAILS, GALLINULES, COOTS.

(217) **Rallus semiplumbeus** *Scl.*

Rallus semiplumbeus SCL., P. Z. S., 1856, p. 31 (Bogotá).

Locally distributed and not uncommon on the Bogotá Savanna.

Savanna at Bogotá, 4.

(224) **Pardirallus nigricans nigricans** (*Vieill.*).

Rallus nigricans VIEILL., Nouv. Dict. d'Hist. Nat., XXVIII, 1819, p. 560 (Paraguay); SCL. & SALV., P. Z. S., 1879, p. 545 (Medellin).

Found by us only in the Cauca Valley. Four specimens are all much more olive above and more plumbeous below than a single specimen from "Brazil."

La Manuelita, 2; Rio Frio, 2.

(230) **Aramides cajanea cajanea** (*Müll.*).

Fulica cajanea Müll., Syst. Nat. Suppl., 1776, p. 119 (Cayenne).

Aramides cayennensis Cass., Proc. Acad. N. S. Phila., 1860, p. 196 (Turbo); Scl. & Salv., P. Z. S., 1879, p. 545 (Remedios).

Aramides cajanus Allen, Bull. A. M. N. H., XIII, 1900, p. 125 (Minca).

Generally distributed through the Tropical Zone. Specimens from the Cauca Valley, upper Magdalena and Buena Vista are paler than those from the Atrato and Caquetá region. The latter are more like those from Trinidad. The differences, however, do not appear to be sufficiently constant to warrant racial distinction.

Atrato River, 3; Salaqui, 1; Rio Frio, 1; Honda, 2; Buena Vista, 1; Florencia, 2.

(235*a*) **Amaurolimnas concolor guatemalensis** (*Lawr.*).

Corethura guatemalensis Lawr., Proc. Acad. N. S. Phila., 1863, p. 106 (Guatemala, J. McLeannan).

The type, an adult, and one immature specimen from Guatemala, an adult from Nicaragua and one adult and one immature specimen from Chiriqui, indicate on comparison with an adult from Jamaica, that the Central American form may be distinguished by its smaller size, more olive upperparts and darker underparts. An immature specimen from Barbacoas appears to be referable to this form.

Place	Sex	Wing	Tarsus	Culmen
Jamaica	ad.	124	44	30
Guatemala	ad.	113	37	25
Nicaragua	♀ ad.	110	39	27
Chiriqui	♀ ad.	112	35	26
Barbacoas, Col.	♂ im.	118	41	26

(236) **Anurolimnas castaneiceps** (*Scl. & Salv.*).

Porzana castaneiceps Scl. & Salv., P. Z. S., 1868, p. 453 (Rio Napo); Exot. Orn., 1869, pl. lxxviii.

An adult female from La Morelia agrees fairly well with Sclater and Salvin's plate (*l. c.*).

La Morelia, 1.

(237) **Anurolimnas hauxwelli** (*Scl. & Salv.*).

Porzana hauxwelli Scl. & Salv., Exot. Orn., 1868, p. 105, pl. liii (Pebas, Peru).

A pair from La Morelia agree closely with Sclater and Salvin's plate (*l. c.*).

La Morelia, 2.

(238) **Porzana carolina** (*Linn.*).

Rallus carolinus Linn., Syst. Nat., 1758, p. 153 (Hudson Bay).
Porzana carolina Scl. & Salv., P. Z. S., 1879, p. 545 (Medellin).

Represented only by an adult female taken on the Bogotá Savanna February 21, 1913.

Bogotá Savanna, 1.

(241) **Porzana flaviventris** (*Bodd.*).

Rallus flaviventer Bodd., Tabl. Pl. Enl., 1783, p. 52 (Cayenne).

A male and female taken in the Juanchito marshes, near Cali, January 31, and February 3, respectively, are apparently the first specimens of this widely distributed and surprisingly constant species to be recorded from Colombia. Compared with a Guiana specimen, they exhibit no differences which may not be attributed to the somewhat faded condition of the Guiana bird.

Cali, 2.

(247) **Creciscus ænops** (*Scl. & Salv.*).

Porzana œnops Scl. & Salv., P. Z. S., 1880, p. 161 (Sarayacu, Ecuador).

A specimen from La Morelia in the same faunal region as the type-locality of *C. œnops*, agrees with descriptions of that species of which I have seen no other specimens.

La Morelia, 1.

(248) **Creciscus albigularis** (*Lawr.*).

Corethrura albigularis Lawr., Ann. Lyc. Nat. Hist., VII, 1861, p. 302 (Panama).
Porzana albigularis Scl. & Salv., P. Z. S., 1879, p. 546 (Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 125 (Pueblo Viejo and Palomina).
Creciscus albigularis Hellm., P. Z. S., 1911, p. 1208 (Sipi).

A single specimen in juvenal plumage taken at San Antonio, January 12, indicates, in connection with Hellmayr's record from the Rio Sipi, that this species ranges from sea-level to at least 6600 feet.

Three adults from Barbacoas are somewhat darker, and less rufescent than the type and two other specimens from Panama. Possibly the difference may be due to the greater age of the Panama skins.

San Antonio, 1; Barbacoas, 3.

(254) **Neocrex colombianus** *Bangs.*

Neocrex colombianus Bangs, Proc. Biol. Soc. Wash., 1898, p. 171 (Palomina, Santa Marta); *Ibid.*, 1908, p. 158 (San Antonio).

Neocrex uniformis Hart., Nov. Zool., 1901, p. 369 (Pambilar, S. Javier, Ec.).

Bangs finds on comparison no difference between a specimen from San Antonio and the type of this species, and hence concludes that *uniformis* Hart. is a synonym. I therefore refer our three specimens from Barbacoas to this species.

Barbacoas, 3.

(255*a*) **Gallinula chloropus pauxilla** *Bangs.*

Gallinula chloropus pauxilla Bangs, Proc. N. E. Zool. Club, V, 1915, p. 96 (Guabina, R. Cauca, Col.).

?Gallinula galeata Scl. & Salv., P. Z. S., 1879, p. 546 (Antioquia; breeding).

Abundant in the Cauca Valley, where we took specimens in December, May and August. Lacking typical specimens of *G. c. galeata* for comparison, I accept Mr. Bangs' proposed form from the Cauca Valley, which is said to differ from *galeata* only in smaller size. I agree with Bangs, Hartert and Rothschild (Bangs, *l. c.*) that the relationships of Old and New World Gallinules are best expressed by treating them as subspecifically related.

Cali, 8.

(257*a*) **Porphyriops melanops bogotensis** *Chapm.*

Porphyriops melanops bogotensis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 169 (Savanna at Bogotá, Col.).

Char. subsp.— Similar to *P. m. melanops* but axillars not barred, the upperparts darker, the interscapulars in the adult largely chestnut, like the wing-coverts.

This rail-like Gallinule is common on the reed-grown sloughs of the Bogotá Savanna. It is the most northern representative of a species which inhabits the Temperate Zone at sea-level in Argentina and Chile.

Savanna at Bogotá, 5; Anolaima, 4.

(258) **Ionornis martinicus** (*Linn.*).

Fulica martinica Linn., Syst. Nat., I, 1766, p. 259 (Martinique, W. I.).

Porphyrio martinica Wyatt, Ibis, 1871, p. 383 (Lake Paturia); Scl. & Salv., P. Z. S., 1879, p. 546 (Medellin; breeding).

Ionornis martinica Robinson, Flying Trip, p. 152 (Barranquilla).

Jonornis martinica Hellm., P. Z. S., 1911, p. 1208 (Tadó).

Of this common wide-ranging species our collection contains only five specimens one of which, taken by Mrs. Kerr at Turbaco, near Carthagena, Aug. 3, 1911, is molting from juvenal into first winter plumage.

Atrato River, 2; Sinu River, 1; Turbaco, 1; Florencia, 1.

(265*a*) **Fulica americana columbiana** *Chapm.*

Fulica americana columbiana Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 170 (La Herrera, Bogotá Savanna, Col.).

Char. subsp.— Similar to *F. a. americana*, but tarsi and toes longer, bill heavier and longer, frontal shield larger, higher, rounded posteriorly and more clearly defined from the bill anteriorly; bill basally, in breeding specimens, yellowish; plumage, particularly of the underparts, darker, more slaty; the under wing-coverts darker with little or no white edgings; the white at the ends of the inner secondaries averaging less in extent and confined largely to the inner web of the feathers.

A locally common bird in the sloughs of the Bogotá Savanna. Doubtless this form is deserving of specific distinction, but its relationships seem best expressed by a trinomial designation. It is remarkable that while in South America as in North America *Fulica* appears to be a Temperate Zone bird, a nearly allied race of *americana* should be found at sea-level in the West Indies.

La Herrera, 12; La Olanda, 1.

Family HELIORNITHIDÆ. Finfeet.

(267) **Heliornis fulica** (*Bodd.*).

Colymbus fulica Bodd., Tabl. Pl. Enl., 1783, p. 54.

Heliornis fulica Wyatt, Ibis., 1871, p. 384 (Ocaña); Scl. & Salv., P. Z. S., 1879, p. 546 (Dept. Antioquia).

Barbacoas, 1.

ORDER **PODICIPEDIFORMES.**

FAMILY PODICIPEDIDÆ. GREBES.

(268) **Colymbus dominicus brachyrhynchus** *Chapm.*

Colymbus dominicus brachyrhynchus CHAPM., Bull. A. M. N. H., XII, 1899, p. 255 (Matto Grosso, Brazil).

Tachybapterus dominicus SCL. & SALV., P. Z. S., 1879, p. 548 (Antioquia; breeding).

An unsexed specimen from Popayan and a male from Cali. The latter measures, wing, 91; culmen, 19 mm., and in length of wing therefore is intermediate between *brachyrhynchus* and *brachypterus,* but in size of bill and color it agrees with *brachyrhynchus.*

Cali, 1; Popayan, 1.

(276) **Podilymbus podiceps** (*Linn.*).

Colymbus podiceps LINN., Syst. Nat., I, 1758, p. 136 (Carolina).

A pair of birds (of which the female was laying) taken at Cali, May 10, agree in size with North American examples but are much more fuscous above, and grayer below. The difference in the underparts resembles that which exists between *Colymbus d. brachypterus* and *C. d. brachyrhynchus,* and is apparently not due to seasonal variation or wear. The Cauca birds doubtless represent a resident race. They measure, male (Fuertes Coll.), wing, 133; tarsus, 39, culmen, 24; depth of bill at nostril, 12; female, wing, 119; tarsus, 36; culmen, 20.5; depth of bill at nostril, 11.

A downy chick but a few days old was taken by Gonzalez at La Herrera in the Bogotá Savanna, May 13, 1913.

Cali, 2; La Herrera, 1.

ORDER **LARIFORMES.**

FAMILY LARIDÆ. SKIMMERS, GULLS, SKUAS.

(319) **Phaëtusa chloropoda** (*Vieill.*).

Sterna chloropoda VIEILL., N. Dict. d'Hist. Nat., XXXII, 1819, p. 171 (Paraguay).

Phœtusa magnirostris Robinson, Flying Trip, p. 150 (R. Magdalena, Barranquilla to Puerto Berrio).

Abundant on the lower Magdalena.
La Playa, 1.

(338) **Rhynchops nigra cinerascens** *Spix.*

Rhynchops cinerascens Spix, Av. Bras., II, 1825, p. 80 pl. cii (Amazon).
Rhynchops nigra Wyatt, Ibis., 1871, p. 384 (Dique, Magdalena).

Abundant on the lower Magdalena ranging up the river in decreasing numbers at least as far as Giradot. No specimens were taken.

ORDER CHARADRIIFORMES.

FAMILY CHARADRIIDÆ. TURNSTONES, OYSTERCATCHERS, PLOVERS, STILTS, SNIPES, PHALAROPES, ETC.

(371) **Belonopterus cayennensis** (*Gmel.*).

Parra cayennensis Gmel., Syst. Nat., I, 1789, p. 706 (Cayenne).
Vanellus cayennensis Wyatt, Ibis, 1871, p. 383 (La Cruz; Lake Paturia); Scl. & Salv., P. Z. S., 1879, p. 546 (Retiro; Frontino; Concordia; breeding).
Belonopterus cayennensis Stone, Proc. Acad. N. S. Phila., 1899, p. 302 (Plains of Tolima).

Of local distribution throughout the Tropical Zone, ascending to the lower borders of the Subtropical Zone over the treeless slopes or clearings.

Atrato River, 2; Caldas, 1; Las Lomitas, 2; San Antonio, (eastern slope), 4; Cali, 3; La Manuelita, 2 (including a newly hatched chick, taken April 15); El Roble, 1; Salento, 3; Puerto Berrio, 1; Barrigon, 3.

(375) **Charadrius dominicus dominicus** *Müll.*

Charadrius dominicus Müll., Syst. Nat. Suppl., 1776, p. 116 (Santo Domingo, W. I.).
Charadrius virginicus Scl. & Salv., P. Z. S., 1879, p. 547 (Medellin).

Buenvista, Nariño, 1 (Sept. 27); Cali, 1 (Dec. 22).

(380) **Ægialitis semipalmata** (*Bonap.*).

Charadrius semipalmatus Bonap., Journ. Acad. N. S. Phila., V, 1825, p. 98 (New Jersey).

Tumaco (July 28), 1.

(381) **Ægialitis collaris** (*Vieill.*).

Charadrius collaris Vieill., Nouv. Dict. d'Hist. Nat., XXXVII, 1817, p. 136 (Paraguay).

Ægialitis collaris Allen, Bull. A. M. N. H., XIII, 1900, p. 126 (Cienaga, Santa Marta).

Cali, 5; La Morelia, 2.

(388) **Himantopus mexicanus** (*Müll.*).

Charadrius mexicanus Müll., Syst. Nat. Suppl., 1776, p. 117 (Mexico).

Himantopus nigricollis Wyatt, Ibis., 1871, p. 383 (Cienaga).

Himantopus mexicanus Robinson, Flying Trip, p. 152 (Barranquilla).

Cali, 2.

(397) **Totanus melanoleucus** (*Gmel.*).

Scolopax melanoleuca Gmel., Syst. Nat., I, 1789, p. 659 (Labrador).

Gambetta melanoleuca Cass., Proc. Acad. N. S. Phila., 1860, p. 195 (Phila.); Wyatt, Ibis, 1871, p. 383 (La Cruz); Scl. & Salv., P. Z. S., 1879, p. 547 (Cauca; Medellin).

Cali (Dec. 25), 1.

(398) **Totanus flavipes** (*Gmel.*).

Scolopax flavipes Gmel., Syst. Nat., I, 1789, p. 659 (New York).

Gambetta flavipes Cass., Proc. Acad. N. S. Phila., 1860, p. 195 (Carthagena); Scl. & Salv., P. Z. S., 1879, p. 547 (Medellin).

Totanus flavipes Allen, Bull. A. M. N. H., XIII, 1900, p. 126 (Cienaga, Santa Marta).

Quibdó (Sept. 1), 2; Barbacoas (Aug. 18), 1; La Manuelita (Apr. 12), 1.

(399) **Helodromas solitarius solitarius** (*Wils.*).

Tringa solitaria Wils., Am. Orn., VII, 1813, p. 53, pl. 58, fig. 3 (Pennsylvania ?).

Rhyncophilus solitarius Scl. & Salv., P. Z. S., 1879, p. 547 (Medellin).

Totanus solitarius Allen, Bull. A. M. N. H., XIII, 1900, p. 126 (Cienaga; Santa Marta).

Quibdó (Nov. 14), 1; Nóvita (Dec. 21), 1; Buenavista, Nariño, (Sept. 28), 1; San Antonio (Jan. 20), 1; Cali (Dec. 25), 1; La Manuelita (Apl. 11), 2; San Agustin (Apl. 9), 1; Puerto Berrio (Jan. 30), 1; Barro Blanco (Nov. 29), 1.

(400) **Actitis macularia** (*Linn.*).

Tringa macularia Linn., Syst. Nat., I, 1766, p. 249 (Pennsylvania).

Tringoides macularius Wyatt, Ibis, 1871, p. 383 (Ocaña); Scl. & Salv., P. Z. S., 1879, p. 547 (Retiro).

Actitis macularia Allen, Bull. A. M. N. H., XIII, 1900, p. 125 (La Concepcion; Cienaga).

Dabeiba (Feb. 14), 1; Nóvita (Dec. 23), 1; San José (Dec. 4), 1; Barbacoas (Aug. 30–Sept. 4), 5; Caldas (Nov. 20), 1; Cali (May 8), male in breeding plumage but testes not enlarged; Salento (Sept. 28), 1; Honda (Feb. 1), 1.

(407) **Tringa minutilla** *Vieill.*

Tringa minutilla Vieill., Nouv. Dict. d'Hist. Nat., XXXIV, 1819, p. 466 (Nova Scotia to Antilles); Allen, Bull. A. M. N. H., XIII, 1900, p. 126 (Cienaga).

Tringa wilsoni Cass., Proc. Acad. N. S. Phila., 1860, p. 196 (Carthagena).

Quibdó (Aug. 20–Nov. 11), 3; Juntas de Tamaná (Dec. 20), 1; Nóvita (Dec. 24), 1; Cali (Dec. 25), 2; Palmira (Apr. 13), 1; Rio Frio (Dec. 2), 1.

(408) **Pisobia maculata** (*Vieill.*).

Tringa maculata Vieill., Nouv. Dict. d'Hist. Nat., XXXIV, 1819, p. 465 (Antilles or southern United States); Allen, Bull. A. M. N. H., XIII, 1900, p. 126 (Cienaga, Santa Marta).

Quibdó (Sept. 1–Nov. 11), 3.

(413) **Gallinago delicata** (*Ord*).

Scolopax delicata Ord, Reprint Wilson's Orn., IX, 1825, p. ccxviii (Pennsylvania).

Gallinago wilsoni Scl. & Salv., P. Z. S., 1879, p. 547 (Medellin).

Three specimens from west of the Eastern Andes are referable to the North American species. Those from Villavicencio, east of the Andes, have the longer, stouter bill and narrower outer tail-feather of *braziliensis*, the resident form.

Nóvita (Dec. 25), 1; Puerto Berrio (Jan. 30), 2.

(414) **Gallinago braziliensis** (*Swains.*).

Scolopax braziliensis SWAINS., Faun. Bor.-Am., Birds, 1831, p. 400 (Brazil).

Villavicencio (Mch. 13, 14), 3.

(416) **Gallinago nobilis** *Scl.*

Gallinago nobilis SCL., P. Z. S., 1856, p. 31 (Bogotá); SCL. & SALV., P. Z. S., 1879, p. 547 (Retiro; breeding).

Our specimens are from the Paramo Zone in the Central and Eastern Andes.

Santa Isabel (12,700 ft.), 2; Valle de las Pappas, 3; Chipaque (10,000 ft.), 1.

(421) **Gallinago jamesoni** (*Bonap.*).

Xylocota jamesoni BONAP., Compt. Rend., XLI, 1855, p. 660 (Andes of Quito, Ecuador).

Eleven specimens from the Paramo Zone of the Central Andes agree with others recently collected on Mt. Pichincha.

Santa Isabel (12,700 ft.), 11.

FAMILY PARRIDÆ. JACANAS.

(427) **Jacana spinosa** (*Linn.*).

Fulica spinosa LINN., Syst. Nat., I, 1758, p. 152 (South America).

La Morelia, 1.

(428) **Jacana melanopygia** (*Scl.*).

Parra melanopygia SCL., P. Z. S., 1856, p. 283 ("S. Marthe in New Grenada,—Verreaux").

Eleven specimens from the Cauca Valley all have the back purplish brown more or less sharply defined from the greenish black of the anterior parts of the body.

All our specimens from the Santa Marta region are referable to *nigra*, a fact which suggests that the type of *melanopygia* did not come from Santa

Marta. A male from Calamar is intermediate between the species and *nigra*. Two other Calamar specimens are referable to *nigra*.

Cali, 10; Rio Frio, 1.

(429) **Jacana nigra** (*Gmel.*).

Parra nigra Gmel., Syst. Nat., I, 1788, p. 708 ("Habitat in Brasilia"); Robinson, Flying Trip, p. 153 (Barranquilla).

Parra hypomelæna Cass., Proc. Acad. N. S. Phila., 1860, p. 196 (R. Atrato); Wyatt, Ibis, 1871, p. 383 (Lake Paturia; Delta Magdalena); Scl. & Salv., P. Z. S., 1879, p. 546 (Antioquia; Sta. Elena [!]; breeding).

Jacana nigra Allen, Bull. A. M. N. H., XIII, 1900, p. 126 (Cienaga).

This is the only Jacana we have taken in northern Colombia and the Magdalena Valley, though as remarked above, one of two specimens from Calamar is intermediate between *nigra* and *melanopygia*. Since *J. spinosa* is the only species known from Brazil, it is obvious that with this form as well, doubtless, as with *melanopygia* the "type-locality" is incorrect. I list below all the specimens of *nigra* contained in our collections.

Puerto Berrio, 2; Calamar, 2 (one intermediate); Barranquilla, 2; La Playa, 8; Santa Marta, 2; Panama R. R., 1.

Family ŒDICNEMIDÆ. Thick-Knees.

(430) **Burhinus bistriatus** (*Wagl.*).

Charadrius bistriatus Wagl., Isis, 1829, p. 648 (Mexico).

Barranquilla, 1 (Fuertes).

Order **GRUIFORMES.**

Family EURYPYGIDÆ. Sun-Bitterns.

(434) **Eurypyga major** *Hartl.*

Eurypyga major Hartl., Syst. Verz. Mus. Bremen, 1844, p. 108 (Colombia); Scl. & Salv., P. Z. S., 1879, p. 546 (Neché).

Rio Salaqui, Chocó, 1.

FAMILY PSOPHIIDÆ. TRUMPETERS.

(437) **Psophia napensis** *Scl. & Salv.*

Psophia napensis SCL. & SALV., Nomen. Av., 1873, p. 162 (Rio Napo).

As might be expected, a specimen from La Morelia is typical. Two specimens from near Mt. Duida at the head of the Orinoco, are apparently typical *crepitans.*

La Morelia, 1.

ORDER **ARDEIFORMES.**

FAMILY IBIDIDÆ. IBISES.

(445) **Theristicus caudatus** (*Bodd.*).

Scolopax caudatus BODD., Tabl. Pl. Enl., 1783, p. 57 (Cayenne).

Theristicus colombianus FINSCH, Notes Leyden Mus., 1899, p. 23 (Bogotá?) = immature *caudatus; cf.* SALVADORI, Ibis, 1900, p. 504.

Common in the Cauca Valley, frequenting chiefly pastures and fields, often far distant from water. It was not observed in the Magdalena Valley but was secured at Barrigon, east of Villavicencio.

La Manuelita, 1; Barrigon, 1.

(448) **Harpiprion cayennensis** (*Gmel.*).

Tantalus cayennensis GMEL., Syst. Nat., I, 1789, p. 652 ("Habitat in Cayenna").

Harpiprion cayennensis CASS., Proc. Acad. N. S. Phila., 1860, p. 197 (R. Nercua); SCL. & SALV., P. Z. S., 1879, p. 543 (Neché).

R. Atrato, 1; Malena, 1; Villavicencio, 2.

(450) **Phimosus berlepschi** *Hellm.*

Phimosus berlepschi HELLM., Verhandl. Zool.-bot. Ges. Wien, LIII, 1903, p. 247 (Orinoco).

I refer a specimen taken by Fuertes at Barranquilla to this species, but have no specimens of true *nudifrons* for comparison.

Barranquilla, 1.

FAMILY PLATALEIDÆ. SPOONBILLS.

(457) **Ajaia ajaja** (*Linn.*).

Platalea ajaja LINN., Syst. Nat., I, 1758, p. 140 ("Habitat in America australi").
Ajaja ajaja ROBINSON, Flying Trip, p. 151 (R. Magdalena).

Of local distribution throughout the Tropical Zone. Common in the Cauca Valley.

Cali, 1.

FAMILY CICONIIDÆ. STORKS.

(460) **Jabiru mycteria** (*Licht.*).

Ciconia mycteria LICHT., Verz. Doubl., 1823, p. 76 (Brazil).

Occasionally seen from the steamer, high in the air, over the lower Magdalena. Four adults and two downy nestlings were collected by Mrs. Kerr on the Rio San Jorge, the nestlings being taken in December.

FAMILY ARDEIDÆ. HERONS, BOATBILLS, BITTERNS.

(461) **Ardea cocoi** *Linn.*

Ardea cocoi LINN., Syst. Nat., I, 1766, p. 237 (Cayenne); WYATT, Ibis, 1871, p. 384 (Lake Paturia); ROBINSON, Flying Trip, p. 152 (R. Magdalena).

Common throughout the Tropical Zone.

Malena, 1; Villavicencio, 1.

(463) **Herodias egretta** (*Gmel.*).

Ardea egretta GMEL., Syst. Nat., I, 1789, p. 629 (Cayenne); WYATT, Ibis, 1871, p. 384 (Lake Paturia); ROBINSON, Flying Trip, p. 152 (R. Magdalena).

Locally distributed throughout the Tropical Zone. It was not uncommon in the Cauca Valley, but few were seen on the Magdalena River. Its numbers have been greatly decreased by plume hunters.

La Morelia, 1.

(464) **Egretta candidissima** (*Gmel.*).

Ardea candidissima Gmel., Syst. Nat., I, 1788, p. 633 (Cayenne); Wyatt, Ibis, 1871, p. 384; Scl. & Salv., P. Z. S., 1879, p. 542 (Cauca); Robinson, Flying Trip, p. 152 (R. Magdalena).

Garzetta candidissima Cass., Proc. Acad. N. S. Phila., 1860, p. 196 (Carthagena; R. Atrato).

Not uncommon in the marshes along the Cauca River, and doubtless occurring locally throughout the Tropical Zone, though with *egretta* it has suffered much from plumers. No specimens were taken.

(465) **Florida cærulea** (*Linn.*).

Ardea cærulea Linn., Syst. Nat. I, 1758, p. 143 (Carolina); Wyatt, Ibis, 1871, p. 384 (Lake Paturia; Cienaga).

Noanamá, 1; Malena, 1.

(466) **Hydranassa tricolor tricolor** (*Müll.*).

Ardea tricolor Müll., Syst. Nat., Anhang., 1776, p. 111 ("America"; Cayenne).

On geographical grounds I refer our immature female from the Sinu River to this form.

(468) **Agamia agami** (*Gmel.*).

Ardea agami Gmel., Syst. Nat., I, 1788, p. 629 (Cayenne).

Agamia agami Allen, Bull. A. M. N. H., XIII, 1900, p. 125 (Mamatoca; Bonda; Minca; Santa Marta).

Rio Salaqui, 1; Rio Atrato, 2.

(469) **Nycticorax nycticorax nævius** (*Bodd.*).

Ardea nævia Bodd., Tabl. Pl. Enl., 1783, p. 56 (Cayenne).

Nycticorax nycticorax nævius Allen, Bull. A. M. N. H., XIII, 1900, p. 125 (Bonda).

Cali, 2; Rio Frio, 1; La Morelia, 1; La Olanda, 2.

(473) **Cochlearius cochlearius** (*Linn.*).

Cancroma cochlearia Linn., Syst. Nat., I, 1766, p. 233; Scl. & Salv., P. Z. S., 1879, p. 542 (Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 124 (Minca; Bonda).

La Olanda, 1.

(475) **Pilherodias pileatus** (*Bodd.*).

Ardea pileata Bodd., Tabl. Pl. Enl., 1783, p. 54 (Cayenne).

This species, which does not appear to have been before recorded from Colombia, was observed by us on the Cauca River and collected on the Sinu by Mrs. Kerr.

Sinu, 1.

(476) **Butorides striata** (*Linn.*).

Ardea striata Linn., Syst. Nat., I, 1766, p. 238 (Surinam).

Butorides grisea Cass., Proc. Acad. N. S. Phila., 1860, p. 196 (Carthagena).

Butorides cyanurus Wyatt, Ibis, 1871, p. 384 (Lake Paturia; Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 542 (Medellin); Robinson, Flying Trip, p. 152 (Barranquilla).

Butorides striata Allen, Bull. A. M. N. H., XIII, 1900, p. 125 (Bonda).

Common in the Tropical Zone. I observe no racial variation in our series of sixteen Colombian specimens, but have no Guiana material for comparison.

Sinu, 1; Atrato, 1; Quindio, 1; Barbacoas, 2; Tumaco, 1; Cali, 5; La Palma, 1; Chicoral, 1; Honda, 1; La Olanda, 1; Villavicencio, 1; La Morelia, 1.

(479) **Tigrisoma lineatum** (*Bodd.*).

Ardea lineata Bodd., Tabl. Pl. Enl., 1783, p. 52 (Cayenne).

We have two adults with rich chestnut-rufous head and neck, and two young in barred black and buff plumage which agree with the adults in having the long, rather slender, regularly tapering bill that appears to characterize this species.

R. Salaqui, 1 juv.; R. Atrato, 1 ad.; Malena, 1 juv.; Puerto Berrio, 1 ad.

(483) **Tigrisoma salmoni** *Scl. & Salv.*

Tigrisoma salmoni Scl. & Salv., P. Z. S., 1875, p. 38 (lower Cauca Valley, Col.); Allen, Bull. A. M. N. H., XIII, 1900, p. 125 (Valparaiso).

I provisionally refer to this species a young female in broadly barred black and rusty plumage from Salento, because of the shortness of its bill which measures only 69 mm. as compared with 108 mm. in a female in similar plumage from Santa Marta, which I take to be *lineatum*. The Santa Marta specimen has the upperparts more broadly barred with rusty of a deeper shade, and the longer under wing-coverts are fuscous distinctly barred and tipped with white, while in the Salento specimen they are fuscous; the bars are broken or appear as a spot, and the white tip is more in the nature of a rounded, terminal band. I do not know that these variations in color have any significance, nor am I aware that the differences, if any, between *lineatum* and *salmoni* at this age have been pointed out.

A male from Juntas de Tamaná is dark olive-green narrowly barred with rusty above, a plumage which seems to follow that of the young bird just mentioned, and which is apparently the one referred to in the British Museum Catalogue (XXXI, p. 198). The bill measures 88 mm., the longer under wing-coverts are fuscous, unbarred, and narrowly margined with white.

The bill in *salmoni* (of which we have three essentially adult specimens) is not only shorter than in *lineatum* but is proportionately heavier and less pointed, while the mandible is sharply bicolor, the basal half being (in skins) largely yellowish horn (except along the tomium), the terminal half blackish, except along the gonys on which the color of the base extends. This character is well shown by the second specimen in intermediate plumage, mentioned above, but not by the black and buff barred young.

Salento, 1 (black and buff, young plumage, but with ovaries somewhat enlarged); Juntas de Tamaná, 1.

(485) **Ixobrychus erythromelas** (*Vieill.*).

Ardea erythromelas Vieill., Nouv. Dict. d'Hist. Nat., XIV, 1817, p. 422 (Paraguay River).

Rio Frio, 1.

(485*a*) **Ixobrychus exilis bogotensis** *Chapm.*

Ixobrychus exilis bogotensis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 171 (Savanna at Bogotá).

Char. subsp.— Similar to *I. e. exilis* but slightly smaller; adult male in breeding plumage with the underparts more richly colored; the breast, abdomen, flanks, under wing and under tail-coverts warm buff, the thighs deeper in tone; the median and lesser wing-coverts richer, mainly ochraceous-buff more or less margined with tawny-russet; adult female more nearly resembling adult female of *I. e. exilis* but the abdominal region, flanks, thighs, under wing and under tail-coverts deeper, warm buff; the back slightly darker; immature male much richer in color than *I. e. exilis* of same age; underparts heavily washed with ochraceous-buff; central wing-covert area ochraceous-tawny; in adult and immature, tarsi black, toes brownish, their soles yellow.

Ixobrychus exilis is apparently a rare bird in South America. It is not included in Brabourne and Chubb's 'The Birds of South America' (1912), but is stated in the A. O. U. 'Check-List' (1910), to occur as far south as Brazil. The discovery of a local race of this boreal species on the Bogotá Savanna is therefore a fact of rather exceptional interest. An apparently mated pair, both having the sexual organs enlarged, was taken on February 17, and an immature male, taken January 21, was purchased by Mr. Fuertes from a local collector. Doubtless the bird is not uncommon in the reedy marshes of the Savanna, but strangely enough it appears not before to have been recorded from the Bogotá region.

Bogotá Savanna, 3.

ORDER **PALAMEDEIFORMES.**

FAMILY PALAMEDEIDÆ. SCREAMERS.

(490) **Palamedea cornuta** *Linn.*

Palamedea cornuta LINN., Syst. Nat., I, 1766, p. 232 (Brasil).

An adult female was taken by Allen on the Cauca marshes near Cali, January 26, 1912. The species does not appear to have been previously recorded from Colombia or from so far west; nevertheless Allen reports it as "not uncommon."

(491) **Chauna chavaria** (*Linn.*).

Parra chavaria LINN., Syst. Nat., I, 1766, p. 260 (Carthagena, Col.).

Commonly observed along the Magdalena River at times in flocks of fifteen or twenty individuals. No specimens were taken.

ORDER ANSERIFORMES.

FAMILY ANATIDÆ. SWANS, DUCKS, GEESE.

(499) **Cairina moschata** (*Linn.*).

Anas moschata LINN., Syst. Nat., I, 1758, p. 124 (Brazil).

Common in the Cauca Valley and occasionally observed from the steamer on the lower Magdalena.

Rio Frio, 2.

(508) **Dendrocygna bicolor** (*Vieill.*).

Anas bicolor VIEILL., Nouv. Dict. d'Hist. Nat., V, 1816, p. 136 (Paraguay) = *D. fulva* Auct.

Generally distributed and more or less common in the Tropical Zone and occurring also on the Bogotá Savanna.

Cali, 2; La Herrera, 1.

(509) **Dendrocygna discolor** *Scl. & Salv.*

Dendrocygna discolor SCL. & SALV., Nomen. Av. Neotrop., 1873, p. 161 (Maroni River, Surinam); HELLM., P. Z. S., 1911, p. 1209 (Sipi).

Dendrocygna autumnalis CASS., Proc. Acad. N. S. Phila., 1860, p. 197 (R. Truando).

Cali, 2.

(518) **Nettion andium** (*Scl. & Salv.*).

Querquedula andium SCL. & SALV., Nomen. Av. Neotrop., 1873, p. 162 (Ecuador).

Recorded both from Ecuador and Venezuela but heretofore unknown from Colombia.

Santa Isabel, 1.

(525) **Querquedula discors** (*Linn.*).

Anas discors LINN., Syst. Nat., I, 1766, p. 205 (Virginia or Carolina).

Querquedula discors SCL. & SALV., P. Z. S., 1879, p. 543 (Medellin).

"Not uncommon at Juanchito near Cali, generally associating with the Cinnamon Teal" (Allen).

Cali (Jan. 29), 1; Puerto Valdivia (Dec. 1), 1.

(526) **Querquedula cyanoptera** (*Vieill.*).

Anas cyanoptera VIEILL., Nouv. Dict. d'Hist. Nat., V, 1816, p. 104 (Rio de la Plata and Buenos Aires).

Querquedula cyanoptera HELLM., P. Z. S., 1911, p. 1209 (Sipi).

Abundant in the Cauca Valley. Four males taken from Dec. 30 to April 12, have numerous round, black spots on the breast, sides and flanks, but in four other males taken in January, these marks are nearly or wholly absent. Their relation to age or season I have been unable to determine.

Cali, 16; Palmira, 1.

(533) **Marila nationi** (*Scl. & Salv.*).

Fuligula nationi SCL. & SALV., P. Z. S., 1877, p. 522 (Lima, Peru).

This duck, of which the two specimens in the British Museum appear to be the only ones hitherto in collections, proves to be a common species in the marshes of the Cauca Valley near Cali, where six males and eight females were secured in January, February and May. Doubtless it is a permanent resident.

This fine series together with Wied's types of "*Anas erythropthalma*" and five specimens[1] of the South African *M. brunnea*, enable me satisfactorily to determine the inter-relationships of these interesting birds (*cf.* Cat. Bds. B. M., XXVII, p. 353).

Although Wied's types, collected at Lagoa do Braco, near Villa de Belmonte in 1815–17 were mounted and are somewhat faded through exposure to light, they are evidently specifically identical with "*Nyroca brunnea*" Eyton (1838) which is therefore a pure synonym of "*Anas erythropthalma*" (Wied).

The Brazilian birds, in spite of their long exposure to light, differ remarkably little from recently collected African skins, while the male type agrees minutely with a mounted African specimen which has been on exhibition for over thirty years. The female type is more rusty below than African females, a difference apparently due to that type of rusty coloration which is frequently found in the Anatidæ.

With but two specimens at his disposal, Salvadori (*l. c.*) was uncertain whether or not *nationi* was separable from *brunnea* (= *erythropthalma*).

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[1] Including one from the National Museum and two, collected by George L. Harrison, Jr. at Lake Naivasha in 1904, from the Philadelphia Academy of Sciences.

The material at hand, however, leaves no doubt of their specific distinctness, although *nationi* appears to be a Pacific coast representative of *erythropthalma*. Although the pattern of coloration is the same in both species, the male of *nationi* is so much darker than the male of *erythropthalma* that less contrast exists between the colors of adjacent areas, notably the sides of the head, the crown and nape, and the pattern is therefore less marked.

In *nationi* the crown and nape are rich, purplish black and this color spreads over the sides of the head and throat where, however, close inspection reveals a rufous shade on the region which, in *erythropthalma,* is strongly rufous-chestnut with but a slight purplish tinge chiefly along the line of junction with the clearly defined glossy seal-brown crown and nape. The male of *nationi* further differs conspicuously from the corresponding sex of *erythropthalma* in having the breast and neck all around glossy black, the back much darker, though similarly vermiculated, the belly dull grayish black, and the flanks deeper chestnut.

The females of the two species, as might be expected, present less striking differences than those exhibited by the males, although they are of much the same nature, being occasioned by the darker color throughout of *nationi.* This greater intensity of color is most apparent in the increased richness of the rufous markings which in *nationi* approach a chestnut rather than ferruginous color, as in *erythropthalma.* The two species, however, are surprisingly alike and it is conceivable that in certain conditions of plumage it might be impossible to distinguish between them.

Cali marshes, 14.

(533*a*) **Marila affinis** (*Eyton*).

Fuligula affinis Eyton, Monog. Anat., 1838, p. 157 (North America).

A female taken by Allen in the Cali marshes January 29, 1912, and said by him to be "the only one seen" appears to be the first recorded specimen of this duck south of Panama.

Cali marshes, 1.

(535) **Nomonyx dominicus** (*Linn.*).

Anas dominica Linn., Syst. Nat., 1766, p. 201 (Santo Domingo).

"Not common in the Cali marshes, generally in small flocks" (Allen).

Cali (Jan. 25–31), 9, all in winter plumage.

(546) **Merganetta colombiana** *Des Murs.*

Merganetta colombiana Des Murs, Rev. Zool., 1845, p. 179 (Colombia).
Merganetta leucogenys Scl. & Salv., P. Z. S., 1879, p. 543 (Frontino).

Found by us only in the Central Andes where it is not uncommon on the rapid rivers of the Subtropical Zone. Our four specimens are males, one being adult, the others immature with the underparts white, unmarked except for the bars on the sides and flanks. The male, taken in the Rio Toché, October 23, had the testes much enlarged, and is just completing a molt in which the tail was renewed, indicating the near approach of the nesting season.

Two of the immature birds, taken at Salento, Sept. 25, are acquiring new wing-quills but the rectrices are very worn and the shafts of the six central feathers are projected 30–34 mm. beyond the vanes of the feather proper. The basal half of this projection is devoid of barbs, while the apical half is finely set with barbs about 2 mm. in length. In the third immature bird, taken at El Eden, Nov. 13, the remiges are fully grown and these peculiar projections are wanting on the much worn tail-feathers. Possibly they represent a preceding plumage and disappear by breaking off. The point at which the break is to occur is indicated by a transparent space just beyond the vane of the feather. If, as seems probable, these rather stiffly barbed, projecting shafts constitute the rectrices of the natal down, they are doubtless of assistance to the young bird in clambering up on the water-washed rocks which form its natural resting-places.

Salento, 2; Rio Toché, 1; El Eden, 1.

Order **PELECANIFORMES.**

Family PHALACROCORACIDÆ. Cormorants, Shags.

(549) **Phalacrocorax vigua vigua** (*Vieill.*).

Hydrocorax vigua Vieill., Nouv. Dict. d'Hist. Nat., VIII, 1817, p. 90 (Paraguay).
Carbo brasilianus? Cass., Proc. Acad. N. S. Phila., 1860, p. 197 (R. Truando).
Phalacrocorax vigua Allen, Bull. A. M. N. H., XIII, 1900, p. 124 (Bonda).
Carbo vigua Hellm., P. Z. S., 1911, p. 1209 (Noanamá).

Abundant along the Cauca River where it nests in large numbers, chiefly in the upper branches of tall trees on the banks of the river.

It was also observed on the Magdalena and in immense numbers near Cienaga in the Santa Marta region.

Cali, 2.

FAMILY PLOTIDÆ. DARTERS.

(554) **Anhinga anhinga** (*Linn.*).

Plotus anhinga LINN., Syst. Nat., I, 1766, p. 218 (Brazil); CASS., Proc. Acad. N. S. Phila., 1860, p. 197 (R. Truando; R. Atrato).

Frequently observed along the Cauca and Magdalena Rivers, but no specimens were taken.

ORDER CATHARTIFORMES.

FAMILY CATHARTIDÆ. CONDORS, VULTURES.

(565) **Sarcoramphus gryphus** (*Linn.*).

Vultur gryphus LINN., Syst. Nat., I, 1758, p. 86 (Chili).

Sarcoramphus gryphus WYATT, Ibis, 1871, p. 382 (Paramo of Pamplona, 11500 ft.).

The Condor is rare in Colombia and occurs only on the crest of the Andes. One seen by Allen and Miller near Almaguer is the only one observed by any of our expeditions. It is recorded from above Bucaramanga by Wyatt, and Brother Apolinar Maria tells me that it is sometimes seen above Bogotá. We took no specimens.

(566) **Gypagus papa** (*Linn.*).

Vultur papa LINN., Syst. Nat., I, 1758, p. 86 ("India occidentali" = Brazil).

Gypagus papa SCL. & SALV., P. Z. S., 1879, p. 542; ROBINSON, Flying Trip, p. 154 (Lower Magdalena); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 129 (El Paramo de Macotoma; Chirua; La Concepcion; Bonda; Santa Marta).

Not common. Observed in both the Cauca and Magdalena Valleys. No specimens taken.

(567) **Catharista urubu** (*Vieill.*).

Vultur urubu VIEILL., Ois. Am. Sept., I, 1807, p. 23, pl. ii (Carolina and Florida).

Cathartes atratus WYATT, Ibis, 1871, p. 382; SCL. & SALV., P. Z. S., 1879, p. 542 (Dept. of Antioquia; breeding).

Catharista atrata ROBINSON, Flying Trip, p. 154 (Abundant everywhere).

Abundant and of general distribution from the Tropical to the Temperate Zones. Our material of this, and the following species, does not warrant a critical study of the groups to which they belong.

Sta. Elena, 2.

(568) **Cathartes aura aura** (*Linn.*).

Vultur aura LINN., Syst. Nat., I, 1758, p. 86 ("America calidiore").

Cathartes aura WYATT, Ibis, 1871, p. 382; SCL. & SALV., P. Z. S., 1879, p. 542 (Dept. Antioquia; breeding); ROBINSON, Flying Trip, p. 154 (Barranquilla; Honda; Guaduas); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 129 (Santa Marta).

Generally distributed throughout Colombia, ranging from the Tropical to the Temperate Zone. We observed but one form of Turkey Vulture in Colombia, the head of which in life is described by Miller as "top of head ashy white; face and neck dark purple." This color varies considerably, and the head of a bird shot by Fuertes is described by him as follows:

"The caruncles about the eyes and forehead, ivory-white, changing to light blue on the nape; hard part of the bill ivory-white, and all the rest of the head light crimson-red. The bird appears able at will to drive all red from the soft parts of his head, leaving it sickly white."

Sta. Elena, 1; Puerto Valdivia, 1.

ORDER **ACCIPITRIFORMES.**

FAMILY FALCONIDÆ. CARACARAS, HAWKS, FALCONS, OSPREYS, ETC.

(573) **Polyborus cheriway** (*Jacq.*).

Falco cheriway JACQ., Beytr. Gesch. Vögel, 1784, p. 17, pl. iv (Aruba Island and coast of Venezuela).

Polyborus cheriway SCL. & SALV., P. Z. S., 1879, p. 542 (Rio Negro breeding); ROBINSON, Flying Trip, p. 155 (R. Magdalena); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 131 (Bonda; Valencia; Santa Marta).

Generally distributed throughout the Tropical Zone and occurring also on the Bogotá Savanna.

La Manuelita, 1; Bogotá Savanna, 1.

(575) **Ibycter americanus** (*Bodd.*).

Falco americanus Bodd., Tabl. Pl. Enl., 1783, p. 25 (Cayenne).

Ibycter aquilinus Cass., Proc. Acad. N. S. Phila., 1860, p. 133 (Turbo; R. Truando).

Ibycter americanus Scl. & Salv., P. Z. S., 1879, p. 541 (Medellin; Remedios; Neché).

Doubtless distributed throughout the Tropical Zone. We have specimens from the Atrato and lower Cauca Valleys, and Caquetá region.

Salaqui, 1; Puerto Valdivia, 1; La Morelia, 3.

(580) **Milvago chimachima** (*Vieill.*).

Polyborus chimachima Vieill., Nouv. Dict. d'Hist. Nat., V, 1816, p. 269 (Paraguay).

Milvago chimachima Wyatt, Ibis, 1871, p. 382; Scl. & Salv., P. Z. S., 1879, p. 541 (Cauca); Robinson, Flying Trip, p. 155 (Barranquilla; R. Magdalena); Allen, Bull. A. M. N. H., XIII, 1900, p. 131 (Valencia).

Of general distribution throughout the Tropical Zone and ranging upward to the lower border of the Subtropical Zone. The band across the primaries is buffier in Colombian specimens than in three from Chapada, Matto Grosso, but I have not sufficient material to determine whether this difference is constant.

San Antonio, 1; Cali, 1; La Manuelita, 1; La Palma, 1; Chicoral, 1; Honda, 1; Calamar; Barrigon, 1.

(582) **Circus hudsonius** (*Linn.*).

Falco hudsonius Linn., Syst. Nat., I, 1766, p. 128 (Hudson Bay).

Circus hudsonicus Scl. & Salv., P. Z. S., 1879, p. 539 (Medellin).

An immature male was collected by Mrs. Kerr on the Atrato River, Nov. 23, 1909. A record from Medellin appears to be the only other known instance of this bird's occurrence in South America.

(583) **Circus cinereus** *Vieill.*

Circus cinereus Vieill., Nouv. Dict. d'Hist. Nat., IV, 1816, p. 454 (Paraguay).

An immature female collected by Gonzalez at Anolaïma in the Bogotá region measures, wing 360; tail, 228; tarsus, 72; culmen, 26 mm. The under wing-coverts are marked with rusty, blackish and buffy, and the bird evidently represents *Circus cinereus,* though I have no specimens of that species (which appears not to have been before recorded from north of Ecuador) in comparable plumage.

Anolaima, 1.

(584) **Circus buffoni** (*Gmel.*).

Falco buffoni Gmel., Syst. Nat., I, 1788, p. 277 (Cayenne).

I provisionally refer to this species, which has not before been recorded from Colombia, two harriers from Rio Frio which resemble one another in color and differ from all descriptions, plates, and specimens of *Circus buffoni* which I have examined, in being black below as well as above. In the color of the upperparts, wings, tail and white facial markings these birds are not unlike two male specimens from Buenos Aires, but the latter have the upper tail-coverts white barred with grayish black, while the breast is black tinged with rusty and with more or less concealed white bars or spots. The lower abdomen, thighs and under tail-coverts are rusty chestnut, the two former narrowly barred or tipped, the latter widely barred with white and with some trace of black. The Rio Frio birds, on the other hand, have the upper tail-coverts black with narrow, usually imperfect white bars, while the entire underparts, thighs and under tail-coverts are black with a faint trace of rusty on the thighs, lower abdomen and under tail-coverts, and in the latter a single white spotted feather.

Whether these birds represent a melanistic phase or undescribed form of *Circus buffoni* the material at hand unfortunately does not show. They agree approximately in size with an unsexed, apparently adult, Guiana specimen which resembles Lesson's plate in being white below,[1] but are considerably smaller than the Buenos Aires birds, as is evident from the appended measurements:

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[1] Traité, p. 87, pl. 3, fig. 1.

	Wing	Tail	Tarsus	Culmen
Rio Frio, ♂,	382	242	72	34
" ♀,	403	248	79	31
Buenos Aires, ♂,	438	270	82	31
" " ♂,	412	247	81	—
Guiana, ad.	392	250	80	32

(589) **Micrastur guerilla interstes** *Bangs.*

Micrastur interstes Bangs, Auk, XXIV, 1907, p. 289 (Cartago, Costa Rica).
Micrastur guerilla interstes Hellm., P. Z. S., 1911, p. 1203 (Nóvita).

I follow Hellmayr in referring Chocó specimens to this form. Adult males from Las Lomitas and San Antonio agree essentially with them. A Nóvita bird has the plumbeous of the back and wings with a brownish tinge and the underparts are more coarsely barred and washed with buffy, differences which probably indicate immaturity. San José, Dabeiba and Salencio immature males have the upperparts light clove-brown, the underparts unbarred and with the nuchal collar ochraceous-buff. The flanks of one bird and the thighs of the other have one or two black and white barred feathers, indicating that the succeeding plumage would be that of the plumbeous adult.

An immature Salento bird is slaty black above, cream-buff with narrow but well-defined black bars below, and the nuchal collar is white. A growing feather on the breast is white finely barred with black, similar to that of the adult, indicating that this plumage also would be followed by that of the plumbeous adult. Possibly this Salento specimen should be referred to *M. g. zonothorax*.

Dabeiba, 2; La Vieja, 1; Nóvita, 1 ♀ ad.; San José, 1 ♂ im.; Las Lomitas, 1 ♂ ad.; San Antonio, 1 ♂ ad.; Salencio, 1 ♂ im.; Salento, 1 ♀ im.

(593*a*) **Parabuteo unicinctus harrisi** (*Aud.*).

Buteo harrisi Aud., Birds Amer. (folio), IV, 1837, pl. 392 (Mississippi).

An adult male, taken at La Manuelita, April 18, 1911, agrees with Texan examples and extends the known range of this form which appears not to have been before recorded south of Panama.

(597) **Accipiter superciliosus** (*Linn.*).

Falco superciliosus Linn., Syst. Nat., I, 1766. p. 128 (Surinam).
Accipiter tinus Scl. & Salv., P. Z. S., 1879, p. 541 (Remedios).
Accipiter superciliosus Hellm., P. Z. S., 1911, p. 1203 (Tadó).

Barbacoas, 1; Puerto Valdivia, 1.

(602) **Accipiter ventralis** *Scl.*

Accipiter ventralis Scl., P. Z. S., 1866, p. 303 ("In Nova Granada interior"); Scl. & Salv., P. Z. S., 1879, p. 541 (Retiro; Concordia; Medellin; Remedios).

San Antonio, 1; Barro Blanco, 1; Andalucia (3000 ft.), 1; Fómeque, 1.

(606) **Accipiter bicolor** (*Vieill.*).

Sparvius bicolor Vieill., Nouv. Dict. d'Hist. Nat., X, 1817, p. 325 (Cayenne).

Accipiter bicolor Scl. & Salv., P. Z. S., 1879, p. 540 (Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 130 (Bonda; Oñaca; Santa Marta).

Accipiter bicolor schistochlamys Hellm., Bull. B. O. C., XVI, 1906, p. 82 (Nanegal, w. Ecuador).

An adult female from Popayan agrees with Hellmayr's description in being "much darker" below than true *bicolor,* but an adult male from Buenaventura agrees in color with one from Purificacion, on the upper Magdalena River, and another from Florencia; whereas one would expect the reverse to occur. Hellmayr refers Panama specimens to *schistochlamys,* but an adult female from Panama is somewhat lighter below than a Bogotá skin in our collection. The palest specimen in our collection is from Matagalpa, Nicaragua, while two other Nicaraguan specimens are similar to one from Florencia. Our limited material, therefore, does not confirm the racial validity of *schistochlamys.*

Popayan, 1; Purificacion, 1; Florencia, 1.

(610*a*) **Tachytriorchis albicaudatus exiguus** *Chapm.*

Tachytriorchis albicaudatus exiguus Chapm., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 637 (Barrigon, Col.).

Char. subsp.— Closely resembling *T. a. sennetti* (Allen) but notably smaller with the upperparts, particularly the head and sides of the neck, darker and more slaty.

Evidently occupies the llanos of eastern Colombia and eastward into Venezuela.

Barrigon, 1.

(617) **Buteo hypospodius** *Gurney.*

Buteo hypospodius Gurney, Ibis, 1876, p. 73, pl. iii (Medellin); Scl. & Salv., P. Z. S., 1879, p. 540 (Medellin).

An immature female from an altitude of 10,500 feet, near Santa Isabel, is referred provisionally to this species. We have a specimen in similar plumage from Ambato, Ecuador.

(620) **Buteo platypterus** (*Vieill.*).

Sparvius platypterus VIEILL., Tabl. Encycl. Méth., III, 1823, p. 1273 (near Philadelphia, Pa.).

Buteo pennsylvanicus SCL. & SALV., P. Z. S., 1879, p. 540 (Concordia; Envigado; Sta. Elena).

Buteo latissimus ALLEN, Bull. A. M. N. H., XIII, 1900, p. 130 (Bonda; Valparaiso; Santa Marta).

A common, widely distributed, forest-inhabiting Hawk which ranges from sea-level to at least 9000 feet.

Juntas de Tamaná, 1, (Dec. 19); Puerto Valdivia, 3; La Frijolera, 2; San Antonio, 7 (Jan. 14–Feb. 16); El Roble, 2 (Nov. 10); Salento, 3 (Oct. 31–Nov. 6); Sta. Elena, 3; Rio Toché, 2 (Oct. 23, 25); Fusugasugá, 1 (April, 13); Villavicencio, 1 (Mch. 9).

(621) **Buteo brachyurus** *Vieill.*

Buteo brachyurus VIEILL., Nouv. Dict. d'Hist. Nat., IV, 1816, p. 477 (Cayenne?).

Buteola brachyura SCL. & SALV., P. Z. S., 1879, p. 540 (Sta. Elena).

An immature male from the Quindio Pass, apparently represents this species, but lacking proper material for comparison the identification must be regarded as provisional.

(623) **Asturina nitida** (*Lath.*).

Falco nitidus LATH., Ind. Orn., I, 1790, p. 41 ("Cayana").

Asturina nitida ALLEN, Bull. A. M. N. H., XIII, 1900, p. 129 (Bonda).

Found in the Tropical Zone.

Remolino, Magdalena River, 2; Villavicencio, 1; Barrigon, 1.

(625) **Rupornis magnirostris magnirostris** (*Gmel.*).

Falco magnirostris GMEL., Syst. Nat., I, 1788, p. 282 (Cayenne).

Asturina magnirostris WYATT, Ibis, 1871, p. 382 (La Cruz); SCL. & SALV., P. Z. S., 1879, p. 540 (Retiro; Concordia; Sta. Elena; Remedios; Medellin; breeds).

Rupornis magnirostris ROBINSON, Flying Trip, p. 154 (Guaduas); STONE, Proc. Acad. N. S. Phila., 1899, p. 304 (Honda; Ibagüe); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 129 (Santa Marta and Minca).

The distribution of this Hawk in Colombia is most puzzling. It occurs in both the Tropical and Subtropical Zones and occupies all the region east of the Central Andes and north of the Cauca Valley, and it is also found on the Pacific coast and southward along the Pacific coast of Ecuador. In general it may be said that in Colombia the range of *magnirostris* surrounds that of those representatives of *ruficauda* which inhabit the Cauca Valley and slopes arising from it.

All the Colombian specimens listed below (except one from Barbacoas) including two from the Atrato Valley, are essentially typical of *magnirostris* in color, though those from west of the Eastern Andes are somewhat smaller than those from the region about Villavicencio; but a bird from Barbacoas and eight from western Ecuador show some slight approach toward *ruficauda.* The white bars below perhaps average wider and the bars on the thighs may average somewhat more rufous; the tail shows the slightest trace of tawny confined as a rule to the outer pair of feathers; the under wing-coverts are white barred with brownish or black; the upper tail-coverts are white, in two specimens with a faint buff tint and barred with blackish. Further material and finer discrimination may show that these birds are distinguishable from true *magnirostris* with which they appear to have no geographic connection; but there can be no doubt that they are referable to that form rather than to *ruficauda.*

In addition to the specimens from western Colombia listed below, we have Ecuador specimens from Esmeraldas (4), Santa Rosa (1), Naranjo, Prov. Guayas (2), and Daule (1). The specimens from the Atrato and Dabeiba are essentially typical *magnirostris* as that species is represented by an excellent series from eastern Colombia and Venezuela. The presence of this form on the Pacific coast is doubtless due to its extension westward from northern Colombia where, as we have seen, *magnirostris* occurs.

Inosculation of these forms is indicated by the capture of a specimen at Noanamá which is obviously nearer to *ruficauda* than to *magnirostris;* but this makes it difficult to explain the reappearance of *magnirostris* in Ecuador.

The further interesting distribution of this species in Colombia is treated under the next form.

Atrato River, 1; Dabeiba, 1; Barbacoas, 1; Puerto Valdivia, 1; Sta. Elena, 1; Barro Blanco, 2; La Palma, 1; Chicoral, 2; 30 m. west of Honda, 3; Villavicencio, 3; Florida, 1.

(625*a*) **Rupornis magnirostris ruficauda** (*Scl.*).

Asturina ruficauda Scl., P. Z. S., 1869, p. 133 (no definite type-locality designated, of the localities named, I select David, western Panama, as type-locality).

? *Asturina magnirostris* Cass., Proc. Acad. N. S., Phila., 1860, p. 132 (Turbo).

The problem presented by our large series of *Rupornis magnirostris* is so puzzling that I have assembled a large series of the northern forms of this species in order to determine its range of individual and geographic variation.

Primarily, it was essential to ascertain what were the characteristics of *R. m. ruficauda* and to what area this race was restricted. In describing it, Sclater gave no definite type-locality and although the first place named under the "Habitat" assigned to the new form is Cordova, Mexico, it is evident from his description and subsequent figure in Exotic Ornithology (pl. 88) that among his specimens the characters on which he based the form were typically developed only in those from western Panama, whence I have a series of eleven specimens. From the localities named by Sclater I therefore suggest David, as an appropriate type-locality for this form.

If this suggestion be accepted, our specimens from Boqueron, near David, are essentially topotypical. All have the interspaces in the rectrices largely or wholly rich tawny or reddish brown, and in the adult, the back and breast are mouse-gray, much as they are in true *magnirostris*.

Aside from its reddish tail, *ruficauda* differs from *magnirostris* in its buffy or ochraceous underparts, under wing-coverts and upper tail-coverts, the bars on which are much brighter, more tawny than in *magnirostris*.

Whether all western Panama specimens have the tail as fully reddish brown as in those I have examined cannot be stated. Of five specimens from the Canal Zone three are essentially like those from Boqueron, two have much more gray in the tail which, however, still shows more or less tawny. Two specimens, one each from Coiba and Iguaro Islands, have the interspaces wholly tawny. A male from Marraganti, 150 miles east of Panama City has about as much gray and tawny in the tail as the two Zone specimens above mentioned, with which, in other respects it also agrees. Although these three birds have not the wholly tawny and black tail of Boqueron specimens, they agree with them in possessing the other characters which distinguish typical *ruficauda;* that is, a back and breast which are essentially like those of *magnirostris,* in combination with buffy or ochraceous underparts, etc. barred with reddish brown.

Turning now to the west, a fine series of seventeen specimens from Costa Rica makes it possible to learn with some certainty the relationships of the form inhabiting that country. In only three does the amount of red in the tail compare with that shown by the Boqueron specimens. The back and breast average less gray and the latter is more streaked. There is thus an advance toward *griseocauda;* but Costa Rica birds are obviously much nearer *ruficauda.*

Beyond Costa Rica, however, while specimens with more or less tawny in the tail are not infrequent (even southern Mexico birds sometimes show this feature) the increasing brownness of the back and breast and of stripes in the latter would incline me to extend the range of *griseocauda* southward through the greater part of Nicaragua.

With the full development of the characters which constitute *griseocauda*, it is interesting to observe that we have in Mexico a race of *magnirostris* which more closely resembles *R. m. nattereri* of southern Brazil than it does any of the geographically intervening races.

The excellence of my material has induced me to depart for a moment from the consideration of our Colombian specimens, to which, having now determined the features which distinguish *ruficauda* and *magnirostris*, we may return.

As has been stated under that form, *magnirostris* occupies the greater part of Colombia, even occurring on the Pacific Coast. We have, however, sixteen specimens from the Cauca Valley region which are obviously referable to *ruficauda* rather than to *magnirostris*. None are without at least a trace of tawny in the tail. In some it is reduced to a minimum, in others it covers most of the interspaces. The color of upper tail-coverts and under wing-coverts is, on the whole intermediate; but the buffy color and bright tawny bars of the abdominal region and thighs is clearly that of *ruficauda*.

Five specimens from Salento are nearest *magnirostris*. One of these might be considered typical of that form were it not for a trace of tawny on the outer pair of rectrices.

The capture of a specimen, which I refer to *ruficauda*, at Noanamá requires comment since a specimen from the Atrato, north of Noanamá, is wholly typical of *magnirostris*.

So far as tail markings are concerned this bird, which is in fresh adult plumage, is nearer *magnirostris*, the outer feathers only showing a trace of tawny, but its deep buffy tawny barred belly, thighs, and under wing-coverts are those of *ruficauda* while the upper tail-coverts are more like those of *ruficauda* than of *magnirostris*.

The presence of this form at Noanamá I take to represent the southward extension of *ruficauda* along the Pacific coast lowlands, whence its occurrence at Las Lomitas indicates that it has reached the Cauca Valley by crossing the Western Andes. The bird of western Ecuador which I refer to *magnirostris*, may have reached that region directly from the east, as have many other Amazonian forms.

Noanamá, 1; Las Lomitas, 1; Cali, 3; Guengüe, 2; Popayan, 1; La Manuelita, 2; Miraflores, 1; Rio Frio, 1; Salento, 5.

(629) **Busarellus nigricollis** (*Lath.*).

Falco nigricollis LATH., Ind. Orn., 1, 1790, p. 35 (Cayana).
Buteogallus nigricollis CASS., Proc. Acad. N. S. Phila., 1860, p. 132 (R. Truando).
Busarellus nigricollis ALLEN, Bull. A. M. N. H., XIII, 1900, p. 130 (Bonda).

R. Atrato, 2; Calamar, 1.

(631) **Urubitinga urubitinga** (*Gmel.*).

Falco urubitinga GMEL., Syst. Nat., I, 1788, p. 265 (Brasilia).
Urubitinga mexicana CASS., Proc. Acad. N. S. Phila., 1860, p. 133 (Atrato).

Two adults and one immature were collected by Mrs. Kerr in the Atrato Valley.

Salaqui, 1; Atrato River, 1; Monguido, 1.

(634) **Urubitinga schistacea** (*Sundev.*).

Asturina schistacea SUNDEV., Öfv. K. Vet. Akad. Förh., VII, 1850, p. 312 (Brazil).

Barrigon, 1 ad. ♀.

(635) **Urubitinga plumbea** (*Salv.*).

Leucopternis plumbea SALV., Ibis, 1872, p. 240, pl. viii (Ecuador); HELLM., P. Z. S., 1911, p. 1204 (Sipi).

Bagado, 1 ad. ♀; Barbacoas, 1 ad. ♀.

(642) **Leucopternis semiplumbea** *Lawr.*

Leucopternis semiplumbea LAWR., Ann. Lyc. Nat. Hist., N. Y., VII, 1861, p. 288 (Panama); SCL. & SALV., P. Z. S., 1879, p. 540 (Remedios); HELLM., P. Z. S., 1911, p. 1204 (Juntas de Tamaná).

Inhabits the Pacific coast, Tropical Zone and eastward into the Cauca-Magdalena region.

An apparently adult male from Los Cisneros differs from three adults (including the type) from Panama and two from Costa Rica in having two bands on the tail, the wing-quills more definitely barred and the feathers of the crown and back with more white at the base. A Baudo adult is similar but the subterminal tail-band is not so definite. Evidently, therefore, these birds resemble two specimens from Remedios, Antioquia, mentioned by Salvin and Godman (Biol. Cent. Am., Aves, III, 85). These writers, however, also record a specimen from Veragua in which the tail is two-banded, and it is not clear, therefore, whether the Colombian specimens represent a new race or a phase of plumage.

Bagado, 1; Los Cisneros, 1.

(649) **Lophotriorchis isidori** (*Des Murs*).

Falco isidori Des Murs, Rev. Zool., 1845 (May), p. 175.
Spizaëtus isidorii Scl. & Salv., P. Z. S., 1879, p. 540 (Dept. Antioquia).
Lophotriorchis isidorii Allen, Bull. A. M. N. H., XIII, 1900, p. 130 (Bonda).

Paramillo Trail, W. Andes (11,000 ft.), 1.

(651) **Spizaëtus ornatus** (*Daud.*).

Falco ornatus Daud., Traité, II, 1800, p. 77 (Cayenne).
Spizaëtus ornatus Scl. & Salv., P. Z. S., 1879, p. 540 (Remedios).

Doubtless occurs throughout the Tropical Zone.

Atrato River, 1; Puerto Valdivia, 1; La Morelia, 1.

(653) **Spizaëtus tyrannus** (*Wied*).

Falco tyrannus Wied, Reis. Braz., I, 1820, p. 300 (Rio Belmonte, Brazil).

Puerto Valdivia, 1.

(654) **Herpetotheres cachinnans cachinnans** (*Linn.*).

Falco cachinnans Linn., Syst. Nat., I, 1758, p. 90 ("Amer. meridionali"; Berlepsch substitutes Surinam; *cf.* Nov. Zool., XV, p. 290).

Herpetotheres cachinnans Scl. & Salv., P. Z. S., 1879, p. 541 (Cauca; Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 131 (Bonda).

Occurs throughout the Tropical Zone, except on the Pacific coast, where it is represented by a smaller, more richly colored form for which I have proposed the name *Herpetotheres cachinnans fulvescens*. Specimens from both the Cauca and Magdalena Rivers are clearly referable to true *cachinnans* of which I have seen three specimens from Surinam in the Penard Collection.

Rio Frio, 1; Honda, 2; Villavicencio, 1; Barrigon, 1.

(654*a*) **Herpetotheres cachinnans fulvescens** *Chapm.*

Herpetotheres cachinnans fulvescens CHAPM., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 638 (Alto Bonito, R. Sucio, w. Col.).

Char. subsp.— Similar to *H. c. cachinnans* (Linn.) but smaller and more richly colored; the upperparts and wings externally darker (dark sepia); the underparts, crown, nape, upper tail-coverts and under wing-coverts nearly uniform cinnamon-buff, instead of white washed with light buff; the crown more streaked, the lower wing-coverts more spotted.

Inhabits the Tropical Zone of the Pacific Coast from Panama southward to Ecuador.

Alto Bonito, 1; San José, 2; Barbacoas, 1.

(655) **Elanoides forficatus yetapa** *Bonn. & Vieill.*

Elanoides yetapa BONN. & VIEILL., Enc. Meth., III, 1823, p. 1205 (Paraguay).

Elanoides furcatus WYATT, Ibis, 1871, p. 382 (Cachiri; Portrerras; Naranjo); SCL. & SALV., P. Z. S., 1879, p. 541 (Concordia; Neché).

Of general distribution from sea-level up to at least 10,000 feet altitude. It occurs singly and is also found in companies. Mr. Outram Bangs calls my attention to the fact that South American specimens (Costa Rica and southward) of this species differ from North American specimens in having the scapulars, and to a lesser extent interscapulars, rich bottle-green instead of dark purplish maroon.

Noanamá, 1; San Antonio, 1; Laguneta, 1; Andalucia, 1; Florencia, 1.

(656) **Rostrhamphus sociabilis** (*Vieill.*).

Herpetotheres sociabilis VIEILL., Nouv. Dict. d'Hist. Nat., XVIII, 1817, p. 318 (So. Am. Lat. 27°–30° S.).

Rostrhamphus sociabilis SCL. & SALV., P. Z. S., 1879, p. 541 (Remedios); ROBINSON, Flying Trip, p. 154 (Barranquilla); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 131 (Bonda).

Abundant in the marshes about Barranquilla, where, on one occasion we saw as many as sixteen perched in a single tree.

Barranquilla, 2.

(658) **Leptodon uncinatus** (*Temm.*).

Falco uncinatus TEMM., Pl. Col., I, 1824, pls. 103–105, (Rio Janeiro).

Cymindis uncinatus SCL. & SALV., P. Z. S., 1879, p. 541 (Medellin).
Leptodon uncinatus ALLEN, Bull. A. M. N. H., XIII, 1900, p. 131 (Bonda).

A female from Rio Frio.

(660) **Leptodon palliatus** (*Temm.*).

Falco palliatus TEMM., Pl. Col., I, 1823, pl. 204 (Brazil).
Leptodon palliatus HELLM., P. Z. S., 1911, p. 1204 (Tadó).
Leptodon cayanensis Auct. (*cf.* Hellm., *l. c.*); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 131 (Masinga).

An immature male collected by Mrs. Kerr appears to be the only recorded instance of the capture of this widely distributed species in Colombia.

Baudo, 1.

(664) **Harpagus bidentatus** (*Lath.*).

Falco bidentatus LATH., Ind. Orn., I, 1790, p. 38 ("Cayana").

We have three adult and five immature specimens, all from the Tropical Zone.

Dabeiba, 2; Bagado, 2; Cisneros, 1; Puerto Valdivia, 4.

(665) **Ictinia plumbea** (*Gmel.*).

Falco plumbeus GMEL., Syst. Nat., I, 1788, p. 283 (Cayenne).
Ictinia plumbea SCL. & SALV., P. Z. S., 1879, p. 541 (Concordia; Remedios); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 131 (Valparaiso; Manaure).

Not uncommon in the Tropical Zone and ranging upward to the Subtropical Zone.

Cali, 2; Villavicencio, 2.

(669) **Falco fusco-cærulescens** *Vieill.*

Falco fusco-cærulescens VIEILL., Nouv. Dict. d'Hist. Nat., XI, 1817, p. 90 (Paraguay).

Fuertes secured a specimen at Cali.

(671) **Falco rufigularis** *Daud.*

Falco rufigularis DAUD., Traité, II, 1800, p. 131 (Cayenne); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 131 (Minca).
Hypotriorchis rufigularis SCL. & SALV., P. Z. S., 1879, p. 541 (Neché).

Our specimens are from the Tropical Zone and the lower border of the Subtropical Zone.

La Manuelita, 1; La Palma, 1; La Candela, 1; Honda, 1; Florencia, 3.

(674*a*) **Cerchneis sparveria caucæ** *Chapm.*

Cerchneis sparverius caucæ Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 375 (La Manuelita, Col.).

Char. subsp.— Agreeing in size and general intensity of color with *C. s. ochracea*, but male with the sides conspicuously spotted; crown darker, nape blacker, terminal white areas on primaries usually not confluent; female with the crown and nape averaging darker; male resembling *C. s. sparveria* in the coloration of the underparts, but crown usually without rufous; subterminal black bar on central rectrices, much narrower; back with fewer bars; female darker above and more washed with rufous below than the female of *C. s. sparveria*, the outer rectrices, quill-markings and outer border of outer feather more rufous, the crown darker and with less or with no rufous.

Inhabits the Cauca Valley region apparently ranging from the Tropical to the Temperate Zone, southward in the Tropical Zone to western Ecuador.

Cali, 1; Popayan, 1; La Florida, 1; La Manuelita, 2; Miraflores, 2; Laguneta, 1.

(674*b*) **Cerchneis sparveria intermedia** *Cory.*

Cerchneis sparveria intermedia Cory, Pub. No. 183, Field Museum, Orn. Ser., I, 9, 1915, p. 325 (Villavicencio, Col.).

Cerchneis sparverius ochracea Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 374 (excl. Venezuela specimens).

The Sparrowhawk ranges from the Tropical to the Temperate Zone, but although it varies widely faunally, not less than four forms being found in Colombia, it appears not to vary zonally in that country.

Thus the present form ranges from the llanos of eastern Colombia over the Eastern Andes to the Magdalena Valley and the eastern slopes of the Central Andes. Northward it enters into Antioquia but in the Paramo of Tamá, on the Venezuela boundary, it is replaced by *C. s. ochracea* Cory (Pub. 182 Field Mus. 1915, p. 298) which, as Cory has shown, is distinguished by the greater width of the subterminal tail-band. In the Cauca Valley it is replaced by *C. s. caucæ*, and in the arid north coastal region by a pale form of *C. s. ochracea*.

La Frijolera, 1; Barro Blanco, 1; Rio Toché, 1; Honda, 5; Andalucia, 6; Fusugasugá, 2; El Piñon, 1; La Hererra, 2; La Olanda, 7; Tena, 1; Anolaima, 1; Caqueza, 1; Villavicencio, 1; Barrigon, 1.

(674*c*) **Cerchneis sparveria** subsp.

A pair of Sparrowhawks taken at Turbaco, near Carthagena, in the arid coastal zone, apparently represents a pale form of *C. s. ochracea* Cory. The subterminal band in the central rectrix of the male measures 32 mm. and in this respect the bird resembles *ochracea,* but the general coloration is more like that of *isabellina.* A male from San Antonio, Bermudez, on the coast of Venezuela, closely resembles the Turbaco male, but is somewhat deeper in color both above and below. The subterminal band in the central rectrix measures 30 mm. The Turbaco female is relatively as pale as the male and has an exceptionally small amount of cinnamon in the white areas on the wing-quills. A female from Noanamá in worn plumage may be most closely related to this Caribbean coast form which I hesitate to characterize by name on the basis of the material at hand.

Turbaco, 2; Noanamá, 1?

ORDER **STRIGIFORMES.**

FAMILY BUBONIDÆ. OWLS.

(682*a*) **Asio flammeus bogotensis** *Chapm.*

Asio flammeus bogotensis CHAPM., Bull. A. M. N. H., XXXIV, 1915, p. 370 (Bogotá Savanna, Col.).

Char. subsp.—Similar to *A. f. flammeus* but ochraceous markings above much more restricted or, in places, obsolete, the upperparts, therefore, much darker; tarsi and toes less heavily feathered, the feathered area on the latter less extended toward the nail; size averaging smaller; bill somewhat heavier and wholly black.

Found by us only in the Temperate Zone on the Bogotá Savanna.

Bogotá Savanna, 3.

(683) **Asio stygius** (*Wagl.*).

N[yctalops] stygius WAGL., Isis, 1832, p. 1221 (Brazil).

Our three specimens are all from the Temperate Zone.

Sta. Elena, 1; Laguneta, 1; La Olanda (near Bogotá), 1.

(691–2) **Otus choliba** (*Vieill.*).

Strix choliba Vieill., Nouv. Dict. d'Hist. Nat., VII, 1817, p. 39 (Paraguay).

Scops brasilianus Scl. & Salv., P. Z. S., 1879, p. 539 (Envigado; Concordia; Medellin; Sta. Elena; breeds).

Megascops brasilianus Stone, Proc. Acad. N. S. Phila., 1899, p. 304 (Honda).

I follow Ridgway (Bull. U. S. N. M., 50, VI, p. 711) and Berlepsch (Bull. B. O. C., XII, p. 8) in referring Colombia specimens to this form. A Dabeiba female is rufous above and in part below, and a female from Villavicencio is intense rufous both below and above. It doubtless represents the extreme development of this color phase of which Berlepsch (*l. c.*) also records Bogotá specimens.

Dabeiba, 1; Anolaima, 3; Villavicencio, 1.

(697) **Otus watsoni** (*Cass.*).

Ephialtes watsoni Cass., Proc. Acad. N. S. Phila., IV, 1848 (So. Am.); Journ. Acad. N. S., Phila., II, 1852, p. 95, pl. xii, fig. 1.

Scops usta Scl., Trans. Z. S., IV, 1862, p. 265, pl. 61 (Ega, Upper Amazon).

Of two Owls collected by Miller at La Morelia, one agrees with the plate of Sclater's "*Scops usta*" (*l. c.*) the other is less tawny in color and approaches *Otus watsoni* (Cass.), the types of which have been loaned me by Dr. Witmer Stone.

This specimen, therefore, indicates that this species has a gray and a rufous color phase and tends to confirm the belief that *usta*, founded on the latter phase, is a pure synonym of *watsoni* founded on the former. (*Cf.* Berlepsch, Bull. B. O. C., XII, 1901, p. 10; Hellmayr, Nov. Zool., XIV, 1907, p. 407).

La Morelia, 2.

(699*a*) **Lophostrix cristatus stricklandi** *Scl. & Salv.*

Lophostrix stricklandi Scl. & Salv., Ibis, 1859, p. 221 (Vera Paz, Guatemala).

Two of three specimens from Barbacoas agree essentially with others from eastern Panama and Nicaragua; the third has the face more rufous and probably therefore approaches true *cristatus*.

Barbacoas, 3.

(703) **Ciccaba albitarsus** (*Scl.*).

Syrnium albitarse Scl., T. Z. S., IV, 1862, p. 263, pl. lx (Bogotá).

Anolaima, 1.

(704) **Ciccaba albogularis** (*Cass.*).

Syrnium albo-gularis Cass., Proc. Acad. N. S. Phila., IV, 1848, p. 124 (South America; Brabourne & Chubb "substitute Colombia," to which I add Choachi, about 15 miles east of Bogotá).

Ciccaba albogularis Scl. & Salv., P. Z. S., 1879, p. 539 (Rio Negro; Sta. Elena; breeds).

This species is apparently confined to the Temperate Zone. Four specimens from Merida, taken at altitudes varying from 8000 to 9000 feet, have the crown and nape more conspicuously spotted with white and the back with deep buff than Colombian specimens and possibly represent a separable race.

Sta. Elena, 1; Choachi, 3.

(707) **Ciccaba virgata virgata** (*Cass.*).

Syrnium virgatum Cass., Proc. Acad. N. S. Phila., IV, 1848, p. 124 ("South America"; Brabourne & Chubb give "Colombia").

Ciccaba virgata Scl. & Salv., P. Z. S., 1879, p. 539 (Concordia); Allen, Bull. A. M. N. H., XIII, 1900, p. 132 (Santa Marta).

Of apparently general distribution in the Tropical Zone.

La Frijolera, 1; above Cali, young in downy (Apl. 3); Rio Frio, 2; Enconosa, below Bogotá, 1.

(709) **Ciccaba nigrolineata** *Scl.*

Ciccaba nigrolineata Scl., P. Z. S., 1859, p. 131 (s. Mexico).

Subsp. a. *Syrnium spilonotum* Sharpe, Cat. Bds. B. M., 1875, p. 277 (Bogotá).

I can discern no difference between our Colombian specimens and others from Panama, Costa Rica and Nicaragua (see also Ridg., Bull. U. S. N. M., 50, VI, p. 762).

Rio Atrato, 1; Rio Frio, 1; 'Bogotá' (native skin), 1.

(720) **Glaucidium brasilianum brasilianum** (*Gmel.*).

Strix brasiliana GMEL., Syst. Nat., I, 1788, p. 289 (Brazil).
Glaucidium ferox ALLEN, Bull. A. M. N. H., XIII, 1900, p. 132 (Bonda).

This does not appear to be a common bird in the country we have visited. Its habits quickly make its presence known, nevertheless a female collected by Miller at Florencia is the only one we have secured.

Florencia, 1.

(721) **Glaucidium brasilianum phalænoides** (*Daud.*).

Strix phalænoides DAUD., Traité, II, 1800, p. 206 (Trinidad).

A specimen from La Playa, near Barranquilla, is matched by one of seven specimens from Bonda, near Santa Marta, and the series of eight birds, containing as it does examples in both rufous and gray and intermediate plumages, doubtless fairly well represents the form of this Owl occupying northern Colombia. As a whole these birds are lighter than *phalænoides,* of which I have six specimens from Trinidad, and darker than *ridgwayi,* of which we have a large series from Mexico. A specimen in the red phase resembles one in this phase from Costa Rica, but those in the gray or grayish phase have the tail barred with blackish and white, while in all our specimens of *ridgwayi* the tail is more rufous. In this respect the Colombian specimens are much nearer *phalænoides.* I therefore refer them to that race, in the belief that there is little or nothing to be gained in proposing forms where geographic variation is so slight, and individual variation so great that subsequent identification, except at type-localities, becomes largely a matter of opinion.[1] In view of its diurnal habits and frequently uttered call, the Pygmy Owl is easily observed and collected, and our failure to secure it elsewhere in Colombia than at the localities above mentioned, is negative evidence of some value.

La Playa, 1.

(722) **Glaucidium jardini** (*Bonap.*).

Phalæopsis jardinii BONAP., Compte Rend., XLI, 1855, p. 654 (Andes of Quito).
Glaucidium jardinii SCL. & SALV., P. Z. S., 1879, p. 539 (Sta. Elena).

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[1] Since the above was written, the Santa Marta form has been described by W. E. C. Todd as *Glaucidium brasilianum medianum* in the Proc. Biol. Soc. Wash., XXIX, 1916, p. 98.

Our only specimen was collected by a native at Choachi in the Temperate Zone some fifteen miles east of Bogotá. It is essentially like two topotypical specimens from Gualea, Ecuador.

Choachi, 1.

(724) **Tyto perlata** subsp.

Strix perlata Licht., Verz. Doubl., 1823, p. 59 (Brazil).
Strix flammea Scl. & Salv., P. Z. S., 1879, p. 538 (Medellin).

We secured but two specimens. Without further material I do not attempt to determine the status of the Colombian form or forms of this wide-ranging bird.

Miraflores, 1; Anolaima, 1.

ORDER **PSITTACIFORMES.**

FAMILY PSITTACIDÆ. MACAWS, PARROTS, PARRAKEETS.

(732) **Ara ararauna** (*Linn.*).

Psittacus ararauna Linn., Syst. Nat., I, 1758, p. 96 ("America meridionali"; Brabourne & Chubb "substitute Brazil").

Ara ararauna Cass., Proc. Acad. N. S. Phila., 1860, p. 137 (Atrato); Robinson, Flying Trip, p. 155 (R. Magdalena).

Inhabits the Tropical Zone. Common on the central Magdalena River.

Puerto Niño, 5; Quisiera, 1; Malena, 1; La Morelia 2.

(734) **Ara macao** (*Linn.*).

Psittacus macao Linn., Syst. Nat., I, 1758, p. 96 ("America meridionali"; Brabourne & Chubb "take Pernambuco").

Ara macao Robinson, Flying Trip., p. 156 (R. Magdalena).

A species of the Tropical Zone of which we collected only two specimens.

Algodonal, Magdalena River, 1; La Morelia, 1.

(735) **Ara chloroptera** *Gray.*

Ara chloropterus Gray, List Psitt. Br. Mus., 1859, p. 26 ("South America"; Brabourne & Chubb, "take Guiana").

Ara chloroptera Allen, Bull. A. M. N. H., XIII, 1900, p. 133 (Valle Dupar; Santa Marta).

Puerto Valdivia, 1.

(736) **Ara militaris militaris** (*Linn.*).

Psittacus militaris LINN., Syst. Nat., I, 1766, p. 139 (no locality; Brabourne & Chubb "suggest Colombia").

Ara militaris CASS., Proc. Acad. N. S., 1860, p. 137 (R. Nercua); SCL. & SALV., P. Z. S., 1879, p. 538 (Dept. Antioquia); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 133 (Arihueca; Bonda: Santa Marta).

Our two specimens are from western Colombia.

Los Cisneros, 1; Salencio, 1.

(739) **Ara severa** (*Linn.*).

Psittacus severus LINN., Syst. Nat., I, 1758, p. 97 ("Habitat in Indiis"; Brabourne & Chubb "substitute Colombia").

Ara severa CASS., Proc. Acad. N. S., Phila., 1860, p. 137 (R. Nercua); SCL. & SALV., P. Z. S., 1879, p. 538 (Cauca); ROBINSON, Flying Trip, p. 156 (R. Magdalena).

A common species of the Tropical Zone, particularly in the Cauca Valley, ascending to the lower limits of the Subtropical Zone.

Cali, 2; La Manuelita, 6; Guengüe, 1; Rio Frio, 3; near Salento, 2; Malena, 1; Barrigon, 5; La Morelia, 2.

(759) **Aratinga wagleri** (*Gray*).

Conurus wagleri GRAY, Gen. Bds., II, 1845, p. 413, pl. 102 (Bogotá); WYATT, Ibis, 1871, p. 381 (Ocaña to Bucaramanga); SCL. & SALV., P. Z. S., 1879, p. 538 (Medellin); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 132 (Valparaiso).

A widely distributed species of the Tropical Zone which ranges upward to the lower border of the succeeding Zone and extends from the Pacific coast to the Cauca and Magdalena Valleys. A specimen from the Pacific coast has the red of the head darker than in other birds of the series.

Alto Bonito, 1; Los Cisneros, 1; San Antonio, 5; Cali, 1; La Manuelita, 3; Miraflores, 1; La Sierra, 1; Chicoral, 2.

(762) **Aratinga æruginosa æruginosa** (*Linn.*).

Psittacus æruginosus LINN., Syst. Nat., I, 1758, p. 98 (based on Edwards' Brown-throated Parrakeet, believed to have come from the "West Indies"; I suggest Calamar, lower Magdalena River, Colombia).

Conurus æruginosus WYATT, Ibis, 1871, p. 381 (Cienaga); ROBINSON, Flying Trip, p. 156 (Barranquilla).

Aratinga æruginosa occidentalis TODD, Proc. Biol. Soc. Wash., XXVIII, 1915, p. 81 (Rio Hacha).

This Paroquet appears to be known only from the arid Caribbean portion of the Tropical Zone of Colombia. In addition to the specimens listed below, we have also one labelled "Santa Marta" and the range of the species may extend eastward into Venezuela. Farther east it is represented by *C. chrysophrys* Swains (= *æruginosus* Auct.), and to the west by *C. ocularis.*

The name *æruginosus* (Linn.) as currently used, is applied to two quite different birds, one of which has a more or less complete and conspicuous ring of orange feathers about the orbital region, while in the other this mark is usually absent, though in some specimens there are a few yellow feathers in this area, particularly below the eye.

Edwards' plate (No. 177) obviously figures a bird without yellow about the eye, and his excellent description makes no mention of an orange orbital ring. Linnaeus' name *æruginosus,* based on Edwards', is clearly, therefore, applicable to the bird without this ring. This is the species of the arid region of Colombia and I have therefore suggested Calamar as an appropriate type-locality.[1]

I am aware that Brabourne & Chubb (Bds. S. A., I, p. 82) have already proposed to "substitute Cayenne" as the type-locality for *æruginosus* but examination of the series of specimens from British and Dutch Guiana indicate that the Cayenne bird is not true *æruginosus.* All our fifteen specimens from the two Guianas named, the lower Orinoco and Bermudez, Venezuela, have the orange orbital ring. They further differ from the Colombian bird, which I consider true *æruginosus,* in having the forehead whiter, the breast and sides of the head paler, and the auriculars less distinctly streaked; in short, are evidently distinct. Swainson's name *chrysophrys,* [2] based on a Guiana bird, is obviously applicable to this form.

La Playa, 4; Varrud, 1; Calamar, 4; Algodonal, 4.

(771) **Ognorhynchus icterotis** (*Mass. & Souancé*).

Conurus icterotis Mass. & Souancé, Rev. et Mag., 1854, p. 71 (Ocaña, New Granada).

Common, and in places, abundant in the Subtropical Zone of the Central Andes. Found in the Western Andes only west of Popayan and on the lower Cauca. In May this species was observed nesting in colonies in holes eighty or more feet up in the wax palms which are so characteristic a feature of the flora along the Quindio Trail above the rivers Tochecito and Toché.

La Frijolera, 5; Andes west of Popayan, 10,340 feet, 2; Miraflores, 3; Rio Toché, 12.

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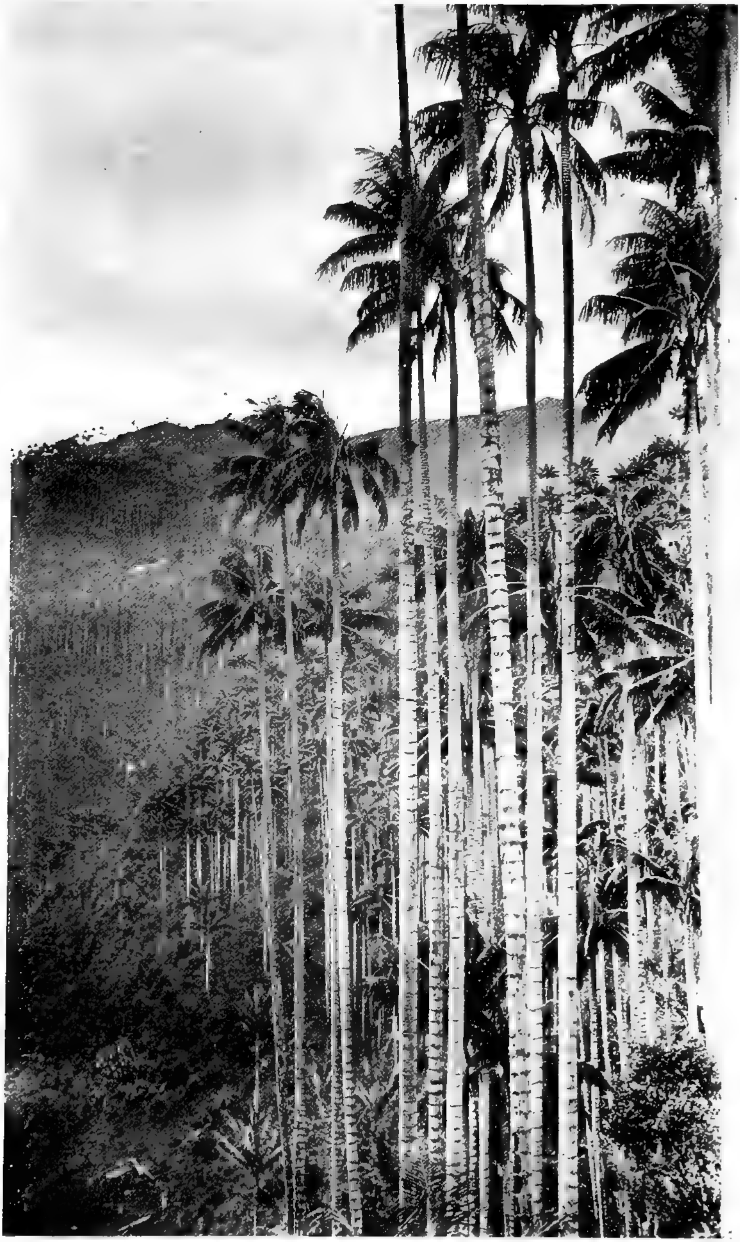
[1] Since the above was written, I observe that W. E. C. Todd (*l. c.*) has described the Colombian form as *Aratinga æruginosa occidentalis,* but if my understanding of the case is correct he has merely renamed the bird on which the name *æruginosa* is based.

[2] Anim. in Menag., 1838, p. 320.



Wax Palms

Photographed on the Quindio Trail, Central Andes, where in 1801 Humboldt and Bonpland discovered this species. Mature trees were estimated to attain a height of 180 to 200 feet. A large Parrot (*Ognorhynchus icterotis*) was found, nesting in colonies in these palms in May, 1911. The nesting-holes were just below the leaves.

(Subtropical Zone.)

(785) **Pyrrhura calliptera** (*Mass. & Souancé*).

Conurus callipterus Mass. &. Souancé, Rev. et Mag., 1854, p. 72 ("Nouvelle Grenade et la Colombie").

We found this species to be common in the Subtropical Zone of the western slope of the Eastern Andes. Owing to our unfortunate failure to discover suitable collecting stations in this zone on the eastern slope of this range, we cannot say whether it is confined to the western side. An immature specimen has the primary coverts green with but a slight yellow margin on one feather.

Fusugasugá, 3; El Roble, 3; Subia, 7.

(786*a*) **Pyrrhura melanura pacifica** *Chapm.*

Pyrrhura melanura pacifica Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 382 (Buenavista, Nariño, Col.).

Char. subsp.— Similar to *P. m. melanura* but smaller, the tail, relatively, much shorter; primary coverts not tipped with yellow; tail, above, redder; forehead greener; bare orbital region blackish instead of whitish (in dried skins); bill less stout, mandible blacker.

This race, which is known only from the type-locality, appears to be the only form of *Pyrrhura* recorded from the Pacific coast region of South America.

Buenavista, Nariño, 3.

(787) **Pyrrhura souancei** (*Verr.*).

Microsittace souancei Verr., Rev. et Mag., 1858, p. 437, pl. 12 (no locality; three specimens from "Napo" listed as "types of the species" in Cat. Bds. B. M., XX, p. 224).

I provisionally refer three adult specimens from La Candela to this species, of which I have seen no specimens. They seem to agree more closely with Verreaux's plate than with the description of this species in the Catalogue of the British Museum. The plate figures a bird having the breast-feathers broadly tipped with whitish — described by Verreaux as "*squame blanchatres*" —; whereas, Salvadori (Cat. Bds., XX, B. M., p. 224) describes *souancei* as having each feather of the breast "with two cross-bands, a light brown one and a second blackish at the edge." Furthermore, the same writer describes *P. berlepschi* (*l. c.*, p. 224) as very much like *souan-*

cei, but with the hoary edges of the feathers of the throat and breast much broader." Our Candela specimens, however, have the breast-feathers even more widely margined than in *berlepschi*, of which we have one specimen from Aplobamba, Bolivia. It is evident, therefore, that the La Candela birds cannot be satisfactorily determined without comparison with authentic specimens of *souancei*. They measure, wing, 137–142; tail, 122–125 mm., while Verreaux states that in *souancei* the wing measures 130, the tail, 120 mm.

La Candela, 3.

(809) **Psittacula conspicillata conspicillata** *Lafr.*

Psittacula conspicillata Lafr., Rev. Zool., 1848, p. 172 ("Colombia aut Mexico"; I suggest Honda, Colombia); Robinson, Flying Trip, p. 156 (Guaduas); Stone Proc. Acad. N. S. Phila., 1899, p. 304 (Villavicencio; Llanos San Martin; Amba, lema).

This small form of *conspicillata* inhabits the upper Magdalena Valley from at least Puerto Berrio southward, and is also found in the Tropical Zone at the eastern base of the Eastern Andes. It is thus found throughout the restricted Bogotá region, a fact which in connection with Lafresnaye's description of the rump, etc. of *conspicillata* as "*pulcherrime indigotinis*" makes it more than probable that his type was a 'Bogotá' bird.

Three males from Puerto Berrio, and two from Malena, have the rump, etc. hyacinth-blue, more purple in tone than in specimens from the more southern and more arid parts of the Magdalena Valley.

Andalucia, 3; Chicoral, 5; Honda, 3; Puerto Berrio, 6; Malena, 2; Buena Vista, 1; Barrigon, 5.

(809*a*) **Psittacula conspicillata caucæ** *Chapm.*

Psittacula conspicillata caucæ Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 383 (Cali, Col.)

Char. subsp.— Similar to *P. c. conspicillata* Lafr. of the Bogotá region but larger, the wings and tail constantly longer, the bill averaging heavier, the blue areas of the rump, inner wing-quills, upper and under wing-coverts decidedly less purple, spectrum-blue, rather than Hay's-blue or blue-violet in color.

Abundant in the Tropical Zone in the Cauca Valley and ranges upward to the lower margin of the Subtropical Zone crossing the Western Andes at the San Antonio Pass (6800 ft.) to the arid upper Dagua Valley. It is commonly seen along scrub-bordered roads and in bushy places.

Caldas, 4; below San Antonio, 1; Cali, 3; La Manuelita, 2; below Miraflores, 2; Rio Frio, 2.

(811) **Psittacula sclateri** *Gray.*

Psittacula sclateri Gray, List Psit., 1859, p. 86 (Rio Javarri, upper Amazons).

I refer to this species, of which I have seen no authentic specimens, two females and an apparently immature male collected by Miller at La Morelia. The male has the rump green slightly brighter than the back, and all have the upper mandible dark brownish black with its cutting edge, to the notch, pale horn.

La Morelia, 3.

(819) **Psittacula spengeli** *Hartl.*

Psittacula spengeli Hartl., P. Z. S., 1885, p. 614 (Barranquilla).

Psittacula exquisita Ridgw., Proc. U. S. N. M., 1887, p. 542 (Cartagena).

Psittacula cyanoptera Cass., Proc. Acad. N. S. Phila. 1860, p. 137 (Carthagena); Wyatt, Ibis, 1871, p. 382 (Cienaga).

Appears to be confined to the arid Tropical Zone of northern Colombia.

La Playa, 3; Calamar, 2.

(825) **Brotogeris jugularis** (*Müll.*).

Psittacus jugularis Müll., Syst. Nat. Suppl., 1776, p. 801 ("America"; Brabourne & Chubb "give Colombia"; to which I suggest adding Bonda, near Santa Marta).

Conurus tovi Cass., Proc. Acad. N. S. Phila., 1860, p. 137 (R. Atrato).

Brotogerys tovi Wyatt, Ibis, 1871, p. 381 (Naranjo); Scl. & Salv., P. Z. S., 1879, p. 538 (Remedios.)

Brotogerys jugularis Robinson, Flying Trip, p. 156 (R. Magdalena); Allen, Bull. A. M. N. H., XIII, 1900, p. 132 (Bonda; Santa Marta).

All our specimens of this common species are from the Magdalena Valley. We have no record of its occurrence on the Pacific Coast or in the Cauca Valley. Honda specimens appear to have the terminal portion of the primary coverts bluer than in most specimens of our large series from Bonda.

Honda, 4; Puerto Berrio, 1; Malena, 5; Banco, 1.

(826) **Brotogeris devillei** *Salvad.*

Brotogerys devillei Salvad., Cat. Bds. B. M., XX, 1891, p. 261 ("River Amazons"; Bates).

Our specimens agree with others from Maipures on the upper Orinoco.

Barrigon, 6.

(834) **Amazona inornata** (*Salvad.*).

Chrysotis inornata Salvad., Cat. Bds. B. M., XX, 1891, p. 281, (Veragua).

Two specimens from the Atrato Valley and one from the head of the Meta. The former are typical; the latter is somewhat darker and the underparts especially are more glaucous. Other, but not wholly satisfactory material, indicates that the characters shown by our Meta specimen are probably of racial value.

La Vieja (1000 ft.), Chocó, 1; Alto Bonito, 1; Barrigon, 1.

(835) **Amazona mercenaria** (*Tsch.*).

Psittacus mercenarius Tsch., Wiegm. Arch. für Naturg., I, 1844, p. 303 (Peru).

Chrysotis mercenaria Scl. & Salv., P. Z. S., 1879, p. 538 (Concordia).

Amazona mercenaria Allen, Bull. A. M. N. H., XIII, 1900, p. 132 (Paramo de Chiruqua).

Inhabits the Subtropical Zone of all three ranges, and occurs also in the Temperate Zone. I have seen no Peruvian specimens.

San Antonio, 1; La Sierra, 4; Almaguer, 1; Salento, 1; Laguneta, 2; Santa Isabel, 1; El Eden, 1; La Palma, 3; Subia, 1.

(836) **Amazona amazonica** (*Linn.*).

Psittacus amazonicus Linn., Syst. Nat., I, 1766, p. 147 (Surinam).

Amazona amazonica Allen, Bull. A. M. N. H., XIII, 1900, p. 132 (Arihueca).

Found in the Tropical Zone of the lower half of the Magdalena Valley both in its humid and arid divisions, and at the eastern base of the Eastern Andes. Specimens from the Magdalena Valley are somewhat smaller than those from east of the Andes.

Malena, 1; La Playa, 4; Barrigon, 1.

(841) **Amazona ochrocephala ochrocephala** (*Gmel.*).

Psittacus ochrocephalus Gmel., Syst. Nat., I, 1788, p. 339 ("America Australi"; Brabourne & Chubb "give Colombia," I suggest adding Villavicencio).

A species of the Tropical Zone which we found only at the eastern base of the Eastern Andes, where five specimens were secured. Only two of these, a male and female, have the yellow of the head confined to the crown while the forehead is the bluish green; but in the other, a male, the yellow nearly reaches the base of the bill, and the bird therefore approaches *A. panamensis*. In *ochrocephala*, however, aside from other differences, the lower mandible appears always to be wholly or largely blackish horn while in *panamensis* it is whitish.

Villavicencio, 2; Barrigon, 3.

(842) **Amazona ochrocephala panamensis** (*Cab.*).

Chrysotis panamensis Cab., J. f. O., 1874, p. 349 (Panama).

Our specimens of this race, which appears to be a representative of *A. ochrocephala*, are all from the Tropical Zone of the Magdalena Valley.

Honda, 2; Puerto Berrio, 2; Malena, 2; Algodonal, 1.

(847) **Amazona salvini** (*Salvad.*).

Chrysotis salvini Salvad., Cat. Bds. B. M., XX, 1891, p. 300 (Lion Hill, Panama).

Malena, 1.

(857) **Pionus menstruus** (*Linn.*).

Psittacus menstruus Linn., Syst. Nat., I, 1766, p. 148 (Surinam).

Pionus menstruus Scl. & Salv., 1879, p. 538 (Remedios); Robinson, Flying Trip, p. 156 (Yeguas); Stone, Proc. Acad. N. S. Phila., 1899, p. 304 (Ambalema); Allen, Bull. A. M. N. H., XIII, 1900, p. 132 (Bonda; Santa Marta); Hellm., P. Z. S., 1911, p. 1202 (Noanamá; Rio Garrapatas).

A common species throughout the Tropical Zone.

Alto Bonito, 5; Barbacoas, 4; Cali, 1; Guengüe, 2; Rio Frio, 1; Puerto Berrio, 2; Buena Vista, 1; Villavicencio, 1.

(866) **Pionus seniloides seniloides** (*Mass. & Souancé*).

Psittacus selinoides (err. typ.) Mass. et Souancé, Rev. et Mag., 1854, p. 73 (Colombia).

Inhabits the Temperate Zone of the Central and Eastern Andes descending to the upper limits of the Subtropical Zone. A specimen from Laguneta in the Central Andes agrees with others from El Piñon in the Bogotá region in having the pinkish crown reaching to behind the eyes, whereas in Ecuador specimens it is restricted to the forehead.

The Ecuador bird will stand as *Pionus seniloides gerontodes* (Finsch).[1]

Laguneta, 1; El Piñon, 2; El Roble, 1.

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[1] *Pionias gerontodes* Finsch, Papag., II, 1868, p. 455 (Ecuador; Fraser).

(867) **Pionus chalcopterus** (*Fraser*).

Psittacus chalcopterus Fraser, P. Z. S., 1840, p. 59 (Bogotá).
Pionus chalcopterus Wyatt, Ibis, 1871, p. 381 (Canta); Scl. & Salv., P. Z. S., 1879, p. 538 (Envigado; Concordia).

Common in the Subtropical Zone of all three ranges, though we did not find it in the Western Andes north of Cerro Munchique, except at Alto Bonito in the Atrato Valley.

Alto Bonito, 1; Cerro Munchique, 1; La Florida, 2; Miraflores, 6; El Roble, 1; El Eden, 1; La Palma, 1; La Candela, 3; near San Agustin, 1; Andalucia (5000 ft.), 1.

(875) **Hapalopsittaca amazonina** (*Des Murs*).

Psittacus amazoninus Des Murs, Rev. Zool., 1845, p. 207 (Bogotá).

A common species at El Roble in the Subtropical Zone above Fusugasugá.

El Roble, 3.

(875*a*) **Hapalopsittaca fuertesi** (*Chapm.*).

Plate XXXVII.

Pionopsitta fuertesi Chapm., Bull. A. M. N. H., XXXI, 1912, p. 143 (Laguneta, 10,300 ft., Cen. Andes, Col.).
Char. sp.— Most nearly related to *H. amazonina* (Des Murs) but face yellow, crown blue.

This distinct and interesting species was found by us only in the Temperate Zone of the Central Andes. Like *amazonina, fuertesi* has the maxillary tomium unnotched, while the tail is even longer than in that species.

Laguneta, 6; Santa Isabel, 1.

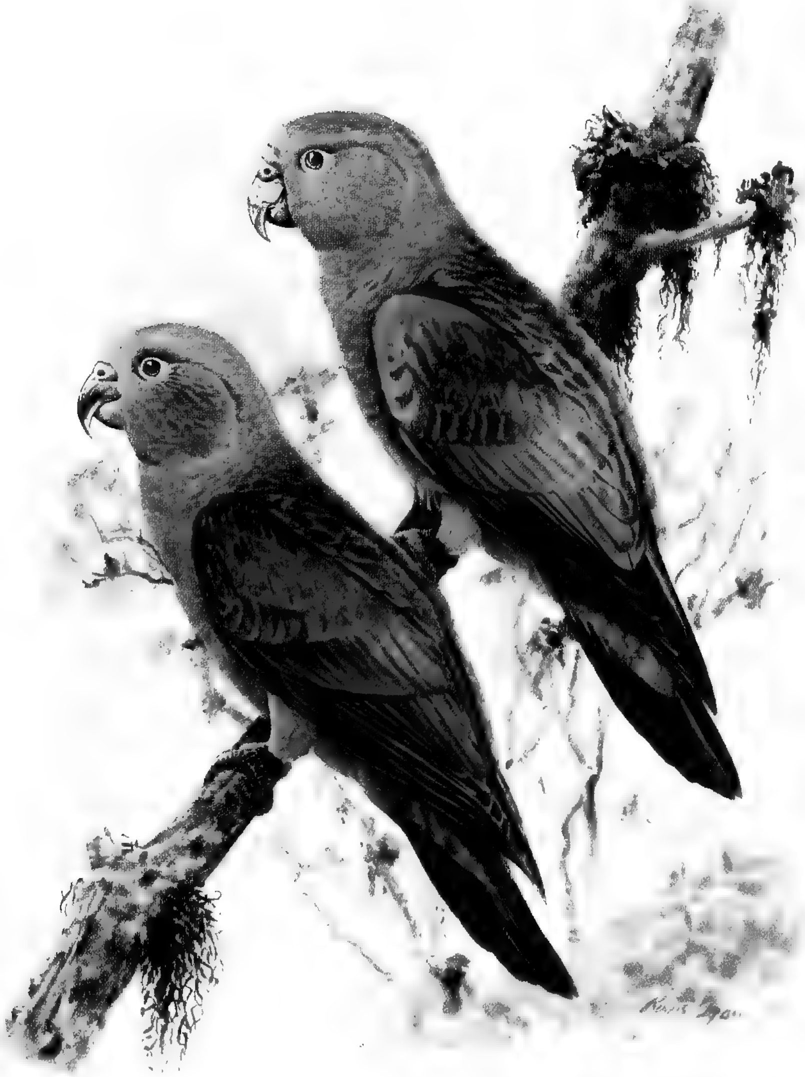
(876) **Eucinetus pulchra** (*Berl.*).

Pionopsitta pulchra Berl., Ornith. Monat., V, 1897, p. 175 (San José, R. Dagua, Col.); Hellm., P. Z. S., 1911, p. 1202 (Noanamá).

Evidently not uncommon in the Tropical Zone of the Pacific Coast.

Andagueda, 2; Noanamá, 1; San José, 7; Barbacoas, 3.

With every desire to give as much weight to resemblances as to differences, I do not feel that the actual facts in relationship are properly expressed by retaining in the genus *Pionopsitta* all the species commonly placed there.



FUERTES' PARRAKEET. *Hapalopsittaca fuertesi* (Chapm.)
Upper figure, adult; lower figure, immature.
(About one-half natural size)

After examination of all the described species except *melanotis* and *pyrrhops* (of which, however, there is an apparently excellent plate — Pl. IX, Cat. B. M.), I agree with Mr. Ridgway (*cf.* Proc. Biol. Soc. Wash., 1912, p. 100) that *Pionopsitta* with *pileatus* as the type, is monotypic. The remaining species (except *melanotis*) I allot generically as follows:

Eucinetus Rchw. (J. f. O., 1881 p. 353, Type *Psittacus caica* Lath.)

1. *Eucinetus caica* (Lath).
2. " *hæmatotis* (Scl. & Salv.)
3. " *coccineicollaris* (Lawr.)
4. " *barrabandi* (Kuhl)
5. " *pulchra* (Berl.)

Pyrilia Bp. (Naumania, 1856, Type *Psittacula pyrilia* Bp.)

1. *Pyrilia pyrilia* (Bp.)

Hapalopsittaca Ridgw. (Proc. Biol. Soc. Wash., 1912, p. 100, Type *Psittacus amazoninus* Des Murs).

1. *Hapalopsittaca amazonina* (Des Murs)
2. " *pyrrhops* (Salv.)
3. " *fuertesi* (Chapm.)

(879) **Pyrilia pyrilia** (*Bonap.*).

Psittacula pyrilia Bonap., Compt Rend., XXXVII, 1853, p. 807 ("New Granada" = Rio Hacha e. of Santa Marta, *vide* Scl. & Salv., Ibis, 1871, p. 381).

Caica pyrilia Wyatt, Ibis, 1871, p. 381 (Canta; San Nicolas; Paturia); Scl. & Salv., P. Z. S., 1879, p. 538 (Remedios).

Inhabits the humid Tropical Zone of the Atrato, lower Cauca, and Magdalena Valleys and evidently ranges upward to at least 9000 feet.

This species is obviously not congeneric with *Pionopsitta pileata,* nor can I refer it to either *Eucinetus* or *Hapalopsittaca.* Its bare orbital and loral region and the character of the skin about the base of the bill do not appear to be shared by any species of these genera.

Alto Bonito, 1; Noanamá, 2; Puerto Valdivia, 3; Sta. Elena, 1.

(890) **Pionites melanocephala pallidus** (*Berl.*).

Caica melanocephala pallida Berl., J. f. O., 1889, p. 317 (Yurimaguas, Peru).

A pair from Amazonian Colombia agrees with one from eastern Ecuador, and differs from lower Orinoco examples in having the flanks, etc. yellow.

Florencia, 2.

ORDER **CORACIIFORMES.**

FAMILY ALCEDINIDÆ. KINGFISHERS.

(895) **Megaceryle[1] torquata torquata** (*Linn.*).

Alcedo torquata LINN., Syst. Nat., I, 1766, p. 180 (Mexico and Martinique).

Ceryle torquata CASS., Proc. Acad. N. S. Phila., 1860, p. 133 (R. Atrato and R. Truando); WYATT, Ibis, 1871, p. 373 (R. Magdalena); SCL. & SALV., P. Z. S., 1879, p. 534 (Neché); ROBINSON, Flying Trip, p. 157 (R. Magdalena); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 136 (Bonda; Santa Marta).

Ceryle torquata torquata HELLM., P. Z. S., 1911, p. 1192, (Siato, 5200 ft.).

Of local distribution throughout the Tropical Zone and ranging upward to the Subtropical Zone.

Cali, 4; Honda, 1; La Playa, 1; Barrigon, 1.

(898) **Chloroceryle amazona** (*Lath.*).

Alcedo amazona LATH., Ind. Ornith., I, 1790, p. 257 (Cayenne).

Ceryle amazona CASS., Proc. Acad. N. S. Phila., 1860, p. 133 (R. Nercua); SCL. & SALV., 1879, p. 534 (Neché); ROBINSON, Flying Trip, p. 157 (R. Magdalena); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 136 (Bonda; Santa Marta); HELLM., P. Z. S., 1911, p. 1192 (Nóvita).

Ceryle amazonia WYATT, Ibis, 1871, p. 373 (Rio de Oro; La Cruz; Lake Paturia and up to 4000 ft.).

Locally distributed throughout the Tropical Zone.

San José, 1; Cali, 7; Rio Frio, 1; Chicoral, 1; Andalucia (w. slope, 3000 ft.), 1; La Morelia, 1.

(899) **Chloroceryle americana americana** (*Gmel.*).

Alcedo americana GMEL., Syst. Nat., I, 1778, p. 451 (Cayenne).

Ceryle americana WYATT, Ibis, 1871, p. 373 (Ocaña; Bucaramanga); ROBINSON, Flying Trip, p. 157 (R. Magdalena; Guaduas); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 136 (Bonda; Cienaga).

Ceryle cabanisi SCL. &. SALV., P. Z. S., 1879, p. 534 (Retiro; Concordia; Medellin).

Ceryle americana americana ? HELLM., P. Z. S., 1911, p. 1192 (Mouth of Calima; Sipi; Noanamá).

Locally distributed throughout the Tropical Zone. While specimens from western Colombia average slightly larger than those from Trinidad and the lower Orinoco (which in default of Cayenne specimens I accept as representing *americana*) and thus more closely agree with *C. a. isthmica*

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[1] *Cf.* Miller on the Classification of Kingfishers, Bull. A. M. N. H., XXXI, 1912, p. 265.

Goldman in size, they are nearer *americana* in color; the males have the breast-patch deeper and more extended anteriorly, the females have the breast-band more solid, less broken than in *isthmica.* From *C. a. cabanisi,* of which I have only one specimen, a female from Lima in the Brewster-Sanford Collection, the Colombian birds differ in their smaller size, smaller bill and more buffy anterior underparts.

Tumaco, 1; Barbacoas, 2; Cali, 5; Rio Frio, 1; Chicoral, 2; La Morelia, 1.

(901) **Chloroceryle inda** (*Linn.*).

Alcedo inda LINN., Syst. Nat., I, 1766, p. 179 ("India occid"; "Surinám" substituted by HELLM., P. Z. S., 1911, p. 1192).

Ceryle inda CASS., Proc. Acad. N. S. Phila., 1860, p. 133 (Turbo); HELLM., P. Z. S., 1911, p. 1192 (Tadó, R. San Juan).

Doubtless of local distribution throughout the Tropical Zone though our specimens come only from the Pacific coast.

Noanamá, 1; Tumaco, 1; Barbacoas, 1.

FAMILY MOMOTIDÆ. MOTMOTS.

(904) **Urospatha martii martii** (*Spix*).

Prionites martii SPIX, Av. Bras., II, 1825, p. 64, pl. 60 (in sylvis Paræ).

To this form, of which I have seen no authentic specimens, I refer five specimens from La Morelia and Florencia. They differ from *semirufa* in having the greenish abdominal area usually more restricted and with less of a bluish tinge, but mainly in the absence of the racket-shaped tips to the central tail-feathers.

La Morelia, 3; Florencia, 2.

(905) **Urospatha martii semirufa** (*Scl.*).

Momotus semirufus SCL., Rev. Zool., 1853, p. 489 ("Santa Marta").

Momotus martii CASS., Proc. Acad. N. S. Phila., 1860, p. 136 (R. Nercua).

Urospatha martii SCL. & SALV., P. Z. S., 1879, p. 534 (Remedios; Neché); STONE, Proc. Acad. N. S. Phila., 1899, p. 305 (Honda).

Urospatha martii semirufa HELLM., P. Z. S., 1911, p. 1193 (Sipi; Nóvita; Noanamá).

Occurs throughout the humid Tropical Zone west of the Eastern Andes. It is doubtful if the type came from Santa Marta which is in the arid or semi-arid Tropical Zone. Recent collectors have not found it there.

I detect no constant difference in color between our twenty-one west Colombian specimens, and five from La Morelia and Florencia in the Caquetá region; in the latter the rufous areas average darker, the rectrices basally greener, and as a rule, the rufous extends somewhat farther on to the abdominal region which is less tinged with blue. The main difference between the two series, however, is to be found in the central tail-feathers which, in the adult, appear usually to have racket-shaped tips in *semirufa* and to have their vanes entire in *martii*. Thus, out of twenty adults of *semirufa*, only one has the central tail-feathers non-spatulate; while none of our five specimens of *martii* has the racket-shaped tips on the central feathers.

These observations confirm those already made by Hellmayr (Nov. Zool., 1907, p. 403) who states that in five specimens from the upper Amazon the tail is not spatulated while "in a large series of *U. m. semirufa* from Bogotá collections, western Ecuador, Costa Rica, etc., the tail-feathers are nearly uniform blue and the middle pair invariably spatulated in the adults."

It is important to observe that so far as our specimens go, the central rectrices in *martii* do not show that breaking down in the barbs at their attachment to the shaft, which is evident in the central tail-feathers of *semirufa* along that portion of the shaft which is in process of losing its barbs.

Alto Bonito, 1; Baudo, 2; Juntas de Tamaná, 5; Barbacoas, 6; Puerto Valdivia, 2; Honda and vicinity, 5.

(906) **Electron platyrhynchus platyrhynchus** (*Leadb.*).

Momotus platyrhynchus Leadb., Trans. Linn. Soc., XVI, 1833, p. 92 ("Brazil" = w. Ecuador). *Cf.* Hart., Nov. Zool., 1898, p. 497; Hellm., *Ibid.* 1907, p. 404.

Crypticus platyrhynchus Cass., Proc. Acad. N. S. Phila., 1860, p. 136 (R. Nercua).

Inhabits the Tropical Zone of western Ecuador northward to the Atrato Valley in Colombia. I have seen no Ecuador specimens but, although showing to a limited extent the decrease in size which occurs in this species, as one advances toward the northern limit of its range, it seems evident that the long-tailed, large-billed form of extreme western Colombia is referable to that form.

Five specimens from Puerto Valdivia, in the lower Cauca, however, as the appended table of measurements shows, are clearly intermediate between *platyrhynchus* and *minor*.

I follow Hellmayr (*l. c.*) in restricting the name *platyrhynchus* to the Pacific coast form. The fact that this species was not definitely recorded from Brazil until 1906 (Hellmayr, *l. c.*), in connection with the fact that it was described as having spatulate central rectrices (a character unknown in specimens from east of the Andes), makes it more than probable that Leadbeater's type did not come from "Brazil" as he stated. If, following Ridgway (Bull. 50, VI, p. 471), we did not accept this view of the case, *pyrrholæmus* (Berl. & Stolz.) shown by Hellmayr to be the Brazilian form, would become a synonym of *platyrhynchus,* leaving the broad-billed race of western Ecuador without a name. In view of the facts stated and of the action of previous authors this proceeding seems to me to be unnecessary.

Hellmayr states that in fourteen adult specimens of *platyrhynchus* and *minor* all have the central rectrices spatulate, but in our eighteen specimens of these forms two adults have the vanes of the central rectrices entire and in a third they are nearly so.

San José, 1; Alto Bonito, 2.

(907) **Electron platyrhynchus pyrrholæmus** (*Berl. & Stolz*).

Prionirhynchus platyrhynchus pyrrholæmus Berl. & Stolz., P. Z. S., 1902, p. 35 (La Merced, cen. Peru).

An adult male from Florencia has the central rectrices fully developed (see measurements beyond) and non-spatulate; both this character and the locality indicate that it should be referred to this form, of which, however, I have no authentic specimens. Aside from the non-spatulate rectrices, which appear to characterize this form, it may be distinguished from *platyrhynchus* by its shorter and narrower bill, while the specimen below recorded has the tail bluer terminally than any of our eighteen specimens from west of the Andes.

Florencia, 1.

(907*a*) **Electron platyrhynchus minor** (*Hart*).

Prionirhynchus platyrhynchus minor Hart., Nov. Zool., V, 1898, p. 498 (Panama).
Prionirhynchus platyrhynchus Scl. & Salv., P. Z. S., 1879, p. 534 (Remedios).

It is difficult to understand why four specimens from Puerto Valdivia on the lower Cauca River, at the eastern base of the Western Andes, should be referable to the Panama form rather than to *E. p. platyrhynchus* which occurs on the opposite or western slope of the Western Andes, at Alto Bonito. In color these specimens are nearer to Pacific coast birds than to Panama birds, in general size, taking Hartert's measurements of *platyrhynchus* (see table beyond) for comparison, they are about intermediate between *platyrhynchus* and *minor,* but in the size of the bill they agree with the latter and the difference between the forms concerned is in this respect so marked that one can not well refer the Puerto Valdivia birds to the large-billed Pacific coast race. While it is true, therefore, that they are not typical of *minor* they certainly do not differ from it sufficiently to warrant subspecific separation, and quite as certainly they could not be referred to *platyrhynchus.*

Of *minor* I have four topotypical specimens from the Canal Zone, with which five specimens from Tapaliza and Tacarcuna essentially agree.

On purely faunal grounds the latter should be referable to *E. p. suboles* Nels., but none of our east Panama specimens has as large a bill as Mr. Nelson's measurements show that his type and only specimen of *suboles* possesses. Either, therefore, the specimen on which *suboles* is based has an abnormally large bill or the race is remarkably localized, and in view of the fact that the locality whence the type comes is in the Tropical Zone, I incline to the former theory.

Puerto Valdivia, 4.

Measurements.

Name	Locality	Sex	Wing	Tail	Culmen	Width of bill at nostril
Electron p. pyrrholæmus,	Florencia, Col.	♂	124	228	42	14
“ “ *platyrhynchus*[1]	Paramba, Ec.	♂	130	223	49	?
“ “ “	San José “	♂	121.5	—	45	17
“ “ (intermediate)	Puerto Valdivia, Col.	♂	123	195	40	14.5
“ “ (intermediate)	Puerto Valdivia, Col.	♂	121	194	41	15.5
“ “ (intermediate)	Puerto Valdivia, Col.	♂	118	183	40	15.5
“ “ *minor*	Tapaliza, Pan.	♂	116	178	42	16
“ “ “	“ “	♂	114.5	178	42.5	15
“ “ “	Tacarcuna “	♂	115	170	41	15
“ “ “	Canal Zone	♂	111	178	40	15
“ “ *suboles*[2]	Cana, Panama	♂	116	177	45	?
“ “ *platyrhynchus,*	Alto Bonito, Col.	♀	124	220	45.5	17
“ “ *platyrhynchus,*	Alto Bonito, Col.	♀	119	200	46	17.5
“ “ (intermediate)	Puerto Valdivia, Col.	♀	120	188	41	15
“ “ *minor*	Tacarcuna, Pan.	♀	108	161	41	15
“ “ “	Tapaliza, “	♀?	110	169	39.5	15
“ “ “	Canal Zone “	♀	111	170	40	15
“ “ “	“ “	♀	111	174	39	15

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[1] *Ex.* Hartert, Nov. Zool., V, 1898, p. 498, 1912.

[2] *Ex.* Nelson, Smith. Misc. Coll., 60, 1912, p. 6.

(911) Momotus subrufescens subrufescens *Scl.*

Momotus subrufescens Scl., Rev. Zool., 1853, p. 489 (Santa Marta, Col.); Stone, Proc. Acad. N. S. Phila., 1899, p. 305 (Ambalema; Honda); Allen, Bull. A. M. N. H., XIII, 1900, p. 135 (Bonda).

Momotus conexus Thayer & Bangs, Bull. Mus. Comp. Zoöl., 1906, p. 215 (Sabana de Panama).

A form of the Tropical Zone which we found only in the Magdalena Valley. Fourteen specimens taken from La Playa to Chicoral, agree in size and color, and differ from a large series of Santa Marta specimens only in being slightly larger. Ridgway (Bull. U. S. N. M., 50, VI, p. 462) refers two specimens from Honda and Ambalema to *M. s. conexus* Thayer & Bangs, but with six topotypical specimens of that form and twenty-six of *subrufescens* from Santa Marta before me, I can detect no constant differences on which to separate the Panama form.

La Playa, 1; Algodonal, 2; Remedios, 1; Malena, 2; Honda, and vicinity, 7; Chicoral, 1.

(911*a*) Momotus subrufescens reconditus *Nels.*

Momotus conexus reconditus Nels., Smith. Miscell. Coll., 60, 3, 1912, p. 4 (Marranganti, e. Panama; type examined).

Comparison with the type and a specimen from Boca de Cupe, southeastern Panama, loaned me by Mr. Nelson, shows that a male from Salaqui and a pair from the Atrato should be referred to this form. There is some variation in the intensity of coloration of the upperparts, but not one specimen in our series of some forty specimens of *subrufescens* has the underparts, particularly the abdominal region, as deeply colored as in any one of these five birds.

Salaqui, 1; Atrato, 2.

912. Momotus momota ignobilis *Berl.*

Momotus brasiliensis ignobilis Berl., J. f. O., 1889, p. 307 (Shanusi, Yurimaguas, Peru).

Their characters indicate that nine Motmots from La Morelia and Florencia, and three from Villavicencio should be referred to this upper Amazonian form. These birds are smaller than true *momota* and the rusty nuchal band appears as a wash rather than a well-defined patch, or it may be entirely wanting, as in two immature specimens from Florencia.

Florencia, 5; La Morelia, 4; Villavicencio, 3; Barrigon, 1.

(916) **Momotus æquatorialis æquatorialis** *Gould.*

Momotus æquatorialis Gould, P. Z. S., 1857, p. 223 (Archidona, e. Ecuador); Scl. & Salv., P. Z. S., 1879, p. 534 (Envigado; Retiro; Concordia; Frontino; breeds); Stone, Proc. Acad. N. S. Phila., 1899, p. 305 (Ibagüe).

Momotus æquatorialis æquatorialis Hellm., P. Z. S. 1911, p. 1194 (Pueblo Rico).

A common species in the Subtropical Zone of all three ranges of the Andes. It appears to be the only member of this family in Colombia which advances above the Tropical Zone. I have no authentic specimens for comparison but Hellmayr (*l. c.*) states that Colombian birds are typical.

San Antonio, 4; La Florida, 1; Miraflores, 3; Salento, 6; Sta. Elena, 1; Rio Toché, 2; La Palma, 1; near San Agustin, 1; Andalucia (7000 ft.), 3.

(919*a*) **Hylomanes momotula obscurus** *Nels.*

Hylomanes momotula obscurus Nels., Smiths. Misc. Coll., **56**, 1911, p. 1 (Cerro Brujo, Canal Zone, Panama).

Five specimens collected by Miller and Boyle at Dabeiba, agree with nine from eastern Panama, and when compared with Guatemalan specimens exhibit the characters attributed by Nelson to this race. The species has not before been recorded from Colombia.

Dabeiba, 5.

Family CAPRIMULGIDÆ. Nightjars.

(923) **Nyctibius longicaudatus** (*Spix*).

Caprimulgus longicaudatus Spix, Av. Bras., II, 1825, p. 1, 1825, pl. i ("in sylvis fl. Japuræ").

An adult male and female from Nóvita, are apparently to be referred to this species which has not before been recorded from Colombia. I have no authentic specimens for comparison.

Nóvita, 2.

(928) **Chordeiles acutipennis acutipennis** (*Bodd.*).

Caprimulgus acutipennis Bodd., Tabl. Pl. Enl., 1783, p. 46 ("Guyane" = Cayenne, *cf.* Berl. & Hart., Nov. Zool., IX, 1902, p. 90).

A pair of Nighthawks from Algodonal and Calamar, Magdalena, Mr. H. C. Oberholser identifies as this form. The Calamar specimen was shot from a scattered flock flying well overhead much as does *C. virginianus* during its migrations. The sexual organs of neither specimen were enlarged.

Rio San Juan, June 18, ad. ♀; Turbaco, Aug. 9, juv. ♂; Algodonal, Jan. 23, ad. ♀; Calamar, Jan. 21, ad. ♂.

(928*a*) **Chordeiles acutipennis texensis** *Lawr.*

Chordeiles texensis LAWR., Ann. Lyc. N. H. N. Y., VI, 1857, p. 167 (Rio Grande, Texas = Fort Ringold, Rio Grande, *cf.* OBERHOLSER, Bull. 86, U. S. N. M., 1914, p. 105).

?*Chordeiles virginianus* SCL. & SALV. P. Z. S., 1879, p. 531 (Dept. Antioquia).

Two males, taken at Noanamá December 29 and 30, are evidently winter visitants of this northern form which does not appear to have been before recorded from South America. Their wing measurements are respectively 177 and 176 mm. In color they are somewhat brighter than the average specimen of *texensis* with the black of the crown deeper and of greater extent, differences which I believe to be seasonal. Only spring and summer specimens of *texensis* are available for comparison.

Noanamá, 2.

(937) **Lurocalis rufiventris** *Tacz.*

Lurocalis rufiventris TACZ., Orn. Perou, I, 1884, p. 209 (Tambillo, Peru).

Not uncommon locally in the Subtropical Zone of the Eastern Andes near Bogotá, hawking well overhead as does *Chordeiles virginianus.* I have seen no Peruvian specimens.

Aguadita, 7; Subia, 3.

(938) **Uropsalis**[1] **lyra** (*Bonap.*).

Hydropsalis lyra BONAP., Consp. Av., I, 1850, p. 59 (Colombia); SCL. & SALV., P. Z. S., 1879, p. 532 (Envigado).

Mrs. Kerr obtained three specimens of this bird west of Honda, one of which is labeled as having been taken at an altitude of 6000 ft.

West of Honda, 3.

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[1] Miller, Bull. A. M. N. H., XXXIV, 1915, p. 516.

(945) **Hydropsalis climacocerca** *Tsch.*

Hydropsalis climacocercus Tsch., Wieg. Arch. für Naturg., 1844, p. 269 (Peru).

A male and two female adults, and two immature specimens from La Morelia evidently represent this species which does not appear to have been before recorded from Colombia. I have seen no other specimens.

La Morelia, 4.

(948) **Nyctidromus albicollis albicollis** (*Gmel.*).

Caprimulgus albicollis Gmel., Syst. Nat., I, 1788, p. 1030 (Cayenne).

Nyctidromus guianensis Cass., Proc. Acad. N. S. Phila., 1860, p. 133 (Turbo).

Nyctidromus albicollis Wyatt, Ibis, 1871, p. 375 (Lake Paturia); Scl. & Salv., P. Z. S., 1879, p. 532 (Concordia; Remedios; Medellin); Robinson, Flying Trip, p. 158 (R. Magdalena); Stone, Proc. Acad. N. S. Phila., 1879, p. 305 (Honda).

We have found this species to be the commonest member of its family. It is distributed throughout the Tropical Zone, and under favorable conditions ranges upward to the lower border of the Subtropical Zone. None of our twenty-six specimens has the wing over 158 mm., and they therefore presumably all represent the resident South American form. There is, however, as usual in this species, much variation in color. A male from La Candela, for example, is paler above and below than any one of ten specimens from Santa Marta (*N. a. gilvus* Bangs), but a female from the same locality is darker than the average "*albicollis*." Specimens from the Pacific coast average darker and smaller than those from the interior and doubtless represent a local race, but I have not a sufficiently large series of true *albicollis* to determine its characters satisfactorily.

Nóvita, 1; Los Cisneros, 1; Barbacoas, 1; Ricaurte, 1; San Antonio, 1; Cali, 1; Rio Frio, 4; Puerto Valdivia, 1; La Sierra, 2; La Candela, 2; Chicoral, 1; Puerto Berrio, 2; Malena, 4; Algodonal, 1 (might be referred to *gilvus*); Buena Vista, 1; Villavicencio, 2.

(951) **Thermochalcis cayennensis cayennensis** (*Gmel.*).

Caprimulgus cayennensis Gmel., Syst. Nat., I, 1788, p. 1031 (Cayenne).

We have found this species only at Villavicencio where it was locally common in brushy places at the border of pastures, and at La Playa. Three males taken at Villavicencio March 12, are apparently just finishing a complete molt, involving both wings and tail. They are considerably paler than a Cayenne specimen, two of them being but slightly darker than a specimen of *insularis* from Curaçao, loaned me by Mr. Todd. The latter, however, has black (and that as a small broken band) on only the outer pair of tail-feathers. A male from La Playa agrees with the Villavicencio males in general color, but has a black bar on only the outer pair of tail-feathers. Possibly it should be referred to *insularis.*

Stenopsis tobagensis Ridgw., (Proc. Biol. Soc. Wash., 1908, p. 195) appears to be the same as *Caprimulgus leopetes* Jard. & Selb., of Tobago (Ills. of Orn., II, 1826–35, pl. lxxxvii).

La Playa, 2; Villavicencio, 3.

(951*a*) **Thermochalcis cayennensis monticola** (*Chapm.*).

Stenopsis cayennensis monticola Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 172 (San Antonio, 6600 ft., Col.).

Char. subsp.— Wings and tail longer, the bill larger than in *S. c. cayennensis*, the female much darker throughout, the crown largely black, the central feathers but narrowly margined with rusty or ochraceous-tawny and grayish; the grayish nuchal area almost wanting, the rusty nuchal collar slightly deeper in color; in the back black predominates, the grayish is reduced to a minimum the feathers being minutely marked with broken rusty; scapulars black widely margined externally with buff or ochraceous as in *cayennensis*, black tail-bars wider and more pronounced, breast and flanks more heavily barred.

Our four specimens of this form were all taken at San Antonio in the Western Andes in January and February, 1911.

(955) **Thermochalcis ruficervix** (*Scl.*).

Stenopsis ruficervix Scl., P. Z. S., 1866, p. 140, pl. xiv (Int. Colombia); Scl. & Salv., P. Z. S., 1879, p. 531 (Envigado; Retiro; Sta. Elena).

Inhabits the Temperate Zone. In view of the fact that in Colombia, as well as in Venezuela and Ecuador, most of our specimens of this bird were taken from above 10,000 feet, I am inclined to regard an immature female collected by Richardson at Tumaco, on the coast of southwestern Colombia, as an accidental visitant at that point. This specimen, it should be added, is considerably paler than any of our other twenty examples of this species.

Tumaco, 1; Andes w. of Popayan, 10,340 ft., 2; La Sierra, 1; Laguneta, 8; El Eden, 1; Chipaque, 1.

(959) **Antrostomus rosenbergi** (*Hart.*).

Caprimulgus rosenbergi HART., Bull. B. O. C., V, 1895, p. 10, (R. Dagua, w. Col.).

A pair taken by Richardson at Barbacoas agrees with Hartert's description. The male has the scapulars, lower breast and abdomen more heavily barred than the female. On the abdomen of the latter there appears a faint suggestion of the white spotting which is so marked a character of *A. occellatus*.

Barbacoas, 2.

FAMILY CYPSELIDÆ. SWIFTS.

(968*a*) **Streptoprocne zonaris altissima** *Chapm.*

Streptoprocne zonaris altissima CHAPM., Bull. A. M. N. H., XXXIII, 1914, p. 604 (Laguneta, Col.).

Char. subsp.— Agreeing in size with *S. z. zonaris* of southern Brazil, but bill heavier, the ridge of the culmen more prominent, general color, particularly of the inner wing-quills and wing-coverts greener, forehead averaging paler, the breast-band broader with the terminal half, rather than the terminal third, of its feathers white, the edge of the wing, as far as the primary coverts and some of the lesser coverts, distinctly margined with white; differs more pronouncedly from *S. z. albicincta* in the characters named, and in its larger size.

The discovery that even birds of such exceptional power of flight as the large Swifts, may have representative forms in zones separated by a few thousand feet, is one of the most interesting results of our studies of zonal distribution in Colombia. *Streptoprocne zonaris albicincta* is distributed throughout the Tropical Zone of Colombia and ascends to at least the lower border of the Subtropical Zone. The form here described, however, we have taken in Colombia only at Laguneta, in the Temperate Zone (one specimen) and on Mt. Pichincha, Ecuador (3 specimens). The differences between *altissima* and *albicincta* are more striking than those which exist between *zonaris* and *albicincta*. There is no indication of intergradation among our twenty Colombian and Ecuadorian specimens of both forms, and it is not probable, in my opinion, that *albicincta* and *altissima* intergrade *inter se*, but that their connectant is true *zonaris*. The intergradation of *altissima* with *zonaris* may reasonably be looked for, at some point where increasing south latitude brings the Temperate Zone to the altitude at which *zonaris* occurs, let us say northwestern Argentina, while the intergradation of *albicincta* with *zonaris* may be looked for in that region south of the Amazon, where the Amazonian forests merge into, or interdigitate, with the highlands of southern Brazil.

Laguneta, 1.

(969) **Streptoprocne zonaris albicincta** (*Cab.*).

Hemiprocne albicincta Cab., J. f. O., 1862, p. 165 (Guiana = "Mexico *bis* Guiana").

Hemiprocne zonaris Scl. & Salv., P. Z. S., 1879, p. 531 (Concordia; Retiro; breeds); Stone, Proc. Acad. N. S. Phila., 1899, p. 305 (near Ambalema); Allen, Bull. A. M. N. H., XIII, 1900, p. 137 (Sta. Marta).

This deeply colored, blue-black Swift inhabits the Tropical Zone of Colombia ranging upward into the Subtropical Zone. I have seen no Guiana specimens, but it is not probable that they differ materially from the lowland form of Colombia. Should the Colombia bird prove to be distinct, it should stand as *S. z. minor* (Lawr.), the type of which in the American Museum agrees with the lowland form.

Alto Bonito, 2; Dabeiba, 3; Los Cisneros, 1; Las Lomitas, 2; San Antonio, 2; Chicoral, 1; Honda, 1; Quetame, 3; Buena Vista, 6; Villavicencio, 1.

(976) **Chætura spinicauda fumosa** *Salv.*

Chætura fumosa Salv., P. Z. S., 1870, p. 204 (Bugaba, Chiriqui); Wyatt, Ibis, 1871, p. 375 (Naranjo).

Found only in the Tropical Zone of the Pacific Coast and lower Cauca.

In the color of the rump and upper tail-coverts four males agree with five others in the Carnegie Museum from Pozo Azul, Costa Rica, but they average slightly greener above and are larger, as the appended measurements show. Possibly the Colombian bird deserves separation.

	Wing	Tail
Colombia, 4 Males	96–101 (99.3)	30.5–41 (40)
Costa Rica, 5 Males	108–112 (109)	40. –43 (41.6)

Juntas de Tamaná, 2; Nóvita, 1; Puerto Valdivia, 1.

(977) **Chætura cinereiventris sclateri** *Pelz.*

Chætura sclateri Pelz., Orn. Bras., I, 1868, p. 56 (Borba, R. Madeira).

A male from Buena Vista, above Villavicencio, measures, wing, 107; tail, 39 mm. It therefore agrees in size with *sclateri* (which has been recorded from e. Ecuador, *cf.* Hellm. Orn. Gesell. Bayern, VIII, 1908, p. 157) which, so far as one can judge from descriptions, it also resembles in color, the belly and rump being grayer than specimens from the Central Andes, identified as *C. c. occidentalis*.

Buena Vista, 1.

(978) **Chætura cinereiventris occidentalis** *Berl. & Tacz.*

Chætura sclateri occidentalis Berl. & Tacz., P. Z. S., 1883, p. 569 (Chimbo, Ecuador).

A female from Juntas de Tamaná, and two from an altitude of about 6000 feet in the Central Andes between Cartago and Salento, are apparently to be referred to this form of which, however, I have seen no authentic specimens. They measure, wing, 114–117; tail, 40–42 mm.

Juntas de Tamaná, 1; Central Andes, 2.

(983) **Cypseloides brunneitorques brunneitorques** (*Lafr.*).

Chætura brunneitorques Lafr., Rev. Zool., 1844, p. 81 (Colombia).

A specimen taken by Fuertes at San Antonio, is our only representative of this species from the Western Andes. It was not met with in the Central Andes but was exceedingly abundant in the Eastern Andes at, and near, Buena Vista. It appears to be mountain-inhabiting and was not secured below 4000 feet.

The sexing of our nine specimens indicates that the rufous collar is worn by adults of both sexes, and that immature birds of both sexes are without it. Thus it is present in three females, one of which had the ovaries slightly enlarged, and in one male; is almost or entirely absent in three females, and indicated by only a slight rufous tint on the nape in one male.

San Antonio, 1; Aguadita, 1; Quetame, 4; Buena Vista, 3.

Family TROCHILIDÆ. Hummingbirds.

(993) **Doryfera ludoviciæ ludoviciæ** (*Bourc. & Muls.*).

Trochilus ludoviciæ Bourc. & Muls., Ann. Soc. Agric. Lyon, X, 1847, p. 136 ("Nouvelle-Grenade"; I suggest Buena Vista, alt. 4500 ft., Eastern Andes, above Villavicencio).

Hemistephania ludoviciæ Scl. & Salv., P. Z. S., 1879, p. 528 (Sta. Elena).

Found in the Subtropical Zone of the Central and Eastern Andes. Our specimens apparently represent but one form.

Miraflores, 1; Salento, 2; Buena Vista, 1.

(995) **Androdon æquatorialis** *Gould.*

Androdon æquatorialis Gould, Ann. and Mag. Nat. Hist., Ser. 3, XII, 1863, p. 247 (Ecuador); Scl. & Salv., P. Z. S., 1879, p. 528 (Remedios); Hellm., P. Z. S., 1911, p. 1176 (Sipi; Tadó).

Inhabits the Tropical Zone of the Pacific coast and eastward, into the Magdalena Valley. Two specimens from "Ecuador" in the Elliot collection, one of which is labeled "a type," have both mandibles strongly hooked and more strongly toothed than in any one of our Colombian specimens. In the latter indeed, the mandibular hook is absent in the adult males as well as females. Possibly these differences may be of racial value, but the proximity of Barbacoas, Col., to the probable type-locality of this species (Tropical Zone west of Quito) and the agreement of our Barbacoas specimens with those from farther north, argues against the variation in question being geographical. Further material is needed, however, to solve this interesting problem.

Juntas de Tamaná, 2; Nóvita, 2; Noanamá, 1; Bagado, 1; Barbacoas, 6.

(999) **Threnetes cervinicauda** *Gould.*

Threnetes cervinicauda Gould, P. Z. S., 1854, p. 109 (Quijos, Ecuador).

Found by us only in the Tropical Zone of Amazonian Colombia.

Florencia, 1; La Morelia, 1.

(1000) **Threnetes ruckeri fraseri** (*Gould*).

Glaucis fraseri Gould, Mon. Trochil., I, 1861, pl. 12 (Esmeraldas).
Threnetes rucheri (*sic*) Boucard, Hummingbird, 1895, V, p. 7 (Rio Dagua).
Threnetes fraseri Bangs, Proc. Biol. Soc. Wash., XXIII, 1910, p. 72 (Naranjito).
Threnetes ruckeri fraseri Hellm., P. Z. S., 1911, p. 1177 (Nóvita).

Inhabits the Tropical Zone of the Pacific coast. Our six specimens from Barbacoas agree with nine others from western Ecuador, including six topotypes from Esmeraldas. Seven specimens from eastern Panama (El Real; Cupe River; Capeti) while nearer *fraseri*, indicate, as Hellmayr (*l. c.*) has already surmised, the intergradation of *fraseri* with *ruckeri* of western Panama, Costa Rica and Nicaragua. The east Panama form has the cinnamon throat-patch brighter and more extensive, the underparts paler, the tail greener than in *fraseri* and thus very appreciably approaches *ruckeri*. Two specimens from the Canal Zone while resembling Costa Rica birds below have the back green with little or no brassy reflection and thus approach *fraseri*.

Barbacoas, 6.

(1000*a*) **Glaucis hirsuta affinis** *Lawr.*

Glaucis affinis Lawr., Ann. Lyc. N. H. N. Y., VI, 1858, p. 261 (Napo, Ecuador).
Glaucis hirsuta Scl. &. Salv., P. Z. S., 1879, p. 528 (Sta. Elena).

Inhabits the Tropical Zone at the eastern base of the Eastern Andes, the Magdalena and Cauca Valleys, the lower Atrato Valley and eastern Panama. The distribution of this species in Colombia agrees, therefore, with that of those birds which evidently have entered the country from Amazonia. (Compare, for example, that of *Ostinops decumanus*).

After comparison of our Colombian specimens and thirteen from eastern Panama (R. Tuyra; R. Capeti) with the type and a topotype of *affinis*, I follow Ridgway in referring birds from the region outlined to that race.

I have not, however, seen specimens of *Glaucis hirsuta fusca* Cory from the southwest shores of Lake Maracaibo (Field Mus. Pub., 167, 1913, p. 286).

Alto Bonito, 2; Cali, 1; Malena, 1; Villavicencio, 1; La Morelia, 2.

(1002) **Glaucis ænea** *Lawr.*

Glaucis æneus Lawr., Proc. Acad. N. S. Phila., 1867, p. 232 (Costa Rica).
Glaucis columbiana Boucard, Gen. Hum. Bds., 1895, p. 402 (Rio Dagua).
Glaucis hirsuta ænea Hellm., P. Z. S., 1911, p. 1178 (Guineo, R. Calima).

Hellmayr (*l. c.*) has already shown that this species occurs on the Pacific coast of Colombia and in northwestern Ecuador, and comparison of eight specimens from San José, Barbacoas, and Esmeraldas, with two from Costa Rica (including the type) and four from Nicaragua, confirms his views. The range of the species is not, however, as he surmised, continuous, and although it inhabits the Tropical Zone, it appears to have a distribution similar to that of the large group of Subtropical Zone species which are unknown between Costa Rica or western Panama and northwestern Colombia.

This fact, in connection with the occurrence of *Glaucis hirsuta affinis* in eastern Panama (see above), and the differences in color between *ænea* and *hirsuta* (*cf.* Ridgway, Bull. 50, V, p. 329) lead me to believe that these birds are specifically distinct, as indeed Mr. Ridgway has already surmised (*l. c.*). Aside from its more bronzy upperparts, our series confirms the statement that in *ænea* the sexes are alike, the male as well as the female being cinnamon below.

San José, 1; Barbacoas, 2.

(1005) **Phœthornis guyi emiliæ** (*Bourc. & Muls.*).

Trochilus emiliæ Bourc. & Muls., Ann. Sci. Phys. et Nat. Lyon, IX, 1846, p. 317 (Bogotá, Colombia).

Phœthornis guyi emiliæ Simon & Dalmas, Ornis, 1901, p. 217 (La Tigra; Las Cruces).

Found in the Subtropical Zone of all three ranges. Specimens from western Colombia seem to show a slight approach toward *P. g. coruscus* in their somewhat bluer rump.

Las Lomitas, 5; San Antonio, 3; Miraflores, 5; Peque, 1; west of Honda, 1; Buena Vista, 3.

(1007) **Phœthornis yaruqui sancti-johannis** *Hellm.*

Phaëthornis yaruqui sancti-johannis Hellm., Bull. B. O. C., XXVII, 1911, p. 92 (Condoto, Rio Condoto, Chocó); P. Z. S., 1911, p. 1178 (Noanamá; Nóvita; Condoto; Sipi; Guineo).

Phaethornis yaruqui Cass., Proc. Acad. N. S. Phila., 1860, p. 194 (R. Truando); Simon & Dalmas, Ornis, XI, 1901, p. 218 (Buenaventura).

Inhabits the Tropical Zone of the Pacific coast. It differs from *yaruqui* of western Ecuador, of which I have thirteen specimens, mainly in its grayer underparts. Four specimens from Barbacoas appear to belong here rather than with *yaruqui.* They are not, however, fully adult.

Alto Bonito, 1; Monquido, 1; Baudo, 1; Nóvita, 1; Noanamá, 2; San José, 4; Buenaventura, 1; Barbacoas, 4.

(1009) **Phœthornis fraterculus moorei** *Lawr.*

Phœthornis moorei Lawr., Ann. Lyc. N. Y., VI, 1858, p. 259 (Napo, Ecuador).

Found in the Tropical Zone of Amazonian Colombia. Comparison with Lawrence's type (A. M. N. H., No. 37084) shows that our Colombian specimens should be referred, as might be expected, to the east Ecuador form. This race agrees in size with British Guiana specimens of *fraterculus* (= *superciliosus* Auct., *cf.* Hellm. Nov. Zoöl., 1907, p. 393) but is less rufescent below.

La Morelia, 5; Florencia, 5.

(1017) **Phœthornis hispidus oseryi** (*Bourc. & Muls.*).

Trochilus oseryi Bourc. & Muls., Ann. Sci. Phys. et Nat. Lyon, Ser. 2, IV, 1852, p. 139 (Pastoya, Ecuador).

A single specimen from Villavicencio agrees with four others from eastern Ecuador including Lawrence's type of *P. villosus* (A. M. N. H., No. 370991 "Napo"), which is evidently a synonym of *oseryi* from essentially the same locality. All differ from two Bolivian (Todos Santos, R. Chaparé) specimens of what is apparently true *hispidus* in their smaller size and somewhat paler underparts.

Villavicencio, 1.

(1019) **Phœthornis syrmatophorus syrmatophorus** *Gould.*

Phaëthornis syrmatophorus Gould, Contrib. to Ornith., 1851, p. 139 (Interior of Ecuador = western Ecuador, *cf.* Hellmayr, P. Z. S., 1911, p. 1179); Scl. & Salv., P. Z. S., 1879, p. 538 (Sta. Elena; Medellin); Simon & Dalmas, Ornis, XI, 1901, p. 217 (La Tigra; Las Cruces).

Phœthornis syrmatophorus syrmatophorus Hellm., P. Z. S., 1911, p. 1179 (La Selva).

Nine specimens from the Subtropical Zone of the Western Andes and western slope of the Central Andes are apparently typical of this form.

San Antonio, 5; Cocal, 1; Cerro Munchique, 2; Salento, 1.

(1020) **Phœthornis syrmatophorus columbianus** *Boucard.*

Phœthornis columbianus Boucard, The Hummingbird, I, 1891, p. 17 (Bogotá).

A specimen from La Palma in the Subtropical Zone, at the head of the Magdalena Valley, has a broad white malar stripe, white throat, partially developed white median line below, and rich rust-colored rump, and is therefore evidently to be referred to the Bogotá region form.

La Palma, 1.

(1021) **Phœthornis anthophilus** (*Bourc. & Muls.*).

Trochilus anthophilus Bourc. & Muls., Rev. Zool., 1843, p. 71 (Upper Magdalena Valley).

Phœthornis anthophilus Allen, Bull. A. M. N. H., XIII, 1900, p. 138 (Valle Dupar; Valencia; Santa Marta).

Taken only in the Magdalena Valley.

Puerto Berrio, 1; Chicoral, 2.

(1031) **Phœthornis griseogularis** *Gould.*

Phaëthornis griseogularis GOULD, P. Z. S., 1851, p. 115 (Colombia).

An immature specimen from Florencia is apparently to be referred to this species.

(1032) **Phœthornis striigularis striigularis** *Gould.*

Phaëthornis striigularis GOULD, Mon. Trochil., I, 1854, facing pl. 37 (Bogotá).
Pygmornis striigularis ALLEN, Bull. A. M. N. H., XIII, 1900, p. 138 (La Concepcion).

Inhabits the Bogotá region and apparently reaches westward into Antioquia, a specimen from Puerto Valdivia in the lower Cauca River being referable to this form rather than to that occupying the Pacific coast, and described below.

West of Honda, 1; Puerto Valdivia, 1.

(1032 *a*) **Phœthornis striigularis subrufescens** subsp. nov.

Phœthornis striigularis SIMON & DALMAS (nec Gould), Ornis, XI, 1901, p. 218 (Naranjo).

Char. subsp.— Similar to *P. s. striigularis* Gould but smaller, with a shorter bill, underparts more rufescent, the throat more uniform, and less streaked.

Type.— No. 117654, Am. Mus. Nat. Hist., Barbacoas, Nariño, Colombia; August 30, 1912; W. B. Richardson.

Range.— The humid Tropical Zone of the Pacific coast region of Colombia and Ecuador.

Oberholser (Proc. U. S. N. M., XXIV, 1902, p. 313) has called attention to the distinguishing characters of the form of this species inhabiting western Ecuador, and has applied to it the name *atrimentalis* Lawr., a species which has commonly been synonymized with *striigularis.* Examination of the type, however, (Am. Mus. Nat. Hist., 46225) shows that it belongs in the group having the underparts cinnamon-rufous, the throat black. In the coloration of these parts, and in its black auriculars, the type of *atrimentalis* resembles *longuemareus;* the upperparts are greener than in *striigularis* and the central tail-feathers are broader and more sharply pointed; the lower mandible is bicolor not concolor as in *longuemareus.* A specimen from Bogotá agrees with the type of *atrimentalis* but has the back more coppery, less greenish. I have not at present material with which to determine the status of this bird but enough has been said to show that it has no close relationship with *P. striigularis.*

Measurements.

	Sex	Wing	Tail	Culmen
P. s. striigularis, Puerto Valdivia, 360 ft., Col.,	♂	36	36	23
“ “ “ Honda “	—	34	34	22.5
“ “ “ Bogotá “	—	38.5	36	22.5
“ “ “ Napo, Ecuador	—	40	41	21.5
P. s. subrufescens, Barbacoas, sea-level, Col.,	♂	—	31.5	19.5
“ “ “ “ “ “	? (Type)	35	32.	19.5
“ “ “ “ “ “	—	36.5	37	19
“ “ “ Nóvita, 400 ft., “	♂	34	32.5	19
“ “ “ Cocal, 4000 ft., “	♂	35	32.5	19
“ “ “ “ “ “ “	♀	37	35	18

Nóvita, 1; Cocal, 2; Barbacoas, 6.

(1043) **Eutoxeres condaminii** (*Bourc.*).

Trochilus condaminii Bourc., Compt. Rend., XXXII, 1851, p. 186 (Archidona, Ecuador, type, 37009, A. M. N. H.).

Two specimens from the Tropical Zone of Amazonian Colombia are somewhat greener above and darker below than the type of this species, but agree with another Ecuadorian example of it. This is apparently an addition to the known Colombian avifauna.

La Morelia, 2.

(1045) **Eutoxeres aquila aquila** (*Bourc.*).

Trochilus aquila Bourc., P. Z. S., 1847, p. 42 (Bogotá region).

Inhabits the Eastern Andes and slopes rising from the Magdalena River.

La Palma, 1; Buena Vista, 1.

(1046) **Eutoxeres aquila salvini** *Gould.*

Eutoxeres salvini Gould, Ann. and Mag. Nat. Hist., I, Ser. 4, 1868, p. 456 (Veragua).

Eutoxeres aquila Simon & Dalmas, Ornis, XI, p. 218 (Plano de los Monos).

Eutoxeres aquila salvini Hellm., P. Z. S., 1911, p. 1180 (Noanamá).

Specimens from the Tropical Zone of the Pacific coast, from San José, agree with Veragua examples in having the rectrices broadly tipped with white.

San José, 2; San Antonio, 1.

(1047) **Eutoxeres aquila heterura** *Gould.*

Eutoxeres heterura Gould, Ann. and Mag. Nat. Hist., I, Ser. 4, 1868, p. 455 (Ecuador).

Eutoxeres baroni Hart. & Hart., Nov. Zoöl., I, 1894, p. 54 (Rio Pescado, w. Ecuador).

Tropical Zone of southwestern Colombia, south of San José and southward into Ecuador. A specimen from Cocal has the white tips of the rectrices reduced to the minimum, and evidently represents the type of coloration to which Hartert (*l. c.*) applied the name *baroni.* I agree with Salvad. & Festa, however (Boll. Mus. Tor., XV, 1900, No. 368, p. 2) that the characters assigned to this form are not of specific value. We have specimens with a maximum and minimum, and intermediate amount of white from the same locality (Rio de Oro, Manavi, Ecuador), a variability which I believe to be individual or attributable to age rather than to race.

Cocal, 1.

(1050) **Campylopterus obscurus æquatorialis** *Gould.*

Campylopterus æquatorialis Gould, Introd. Trochil., 1861, p. 54 (Quito).

Occurs in Amazonian Colombia. The type doubtless came from the Napo region. I have seen no specimens of true *obscurus* and follow Hellmayr's form of recognition for the Ecuadorian bird (*cf.* Nov. Zool., 1906, p. 375).

La Morelia, 1.

(1052) **Campylopterus falcatus** (*Swains.*).

Trochilus falcatus Swains., Zool. Ill., II, 1821, tab. 83 ("Spanish Main" — Northeast Venezuela, *cf.* Hellm. & von Seilern, Archiv für Naturg., 1912, p. 138).

Our specimens are from the upper border of the Tropical Zone in all three ranges. Hellmayr (*l. c.*) has shown that Vieillot's "*Trochilus lazulus*" is not applicable to this species.

Peque, 1; San Agustin, 1; Quetame, 3; Buena Vista, 1.

(1058) **Florisuga mellivora mellivora** (*Linn.*).

Trochilus mellivorus Linn., Syst. Nat., I, 1758, p. 121 ("India"; Brabourne & Chubb "designate Guiana).

Florisuga mellivora Scl. & Salv., P. Z. S., 1879, p. 539 (Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 138 (Bonda; Cacagualito); Simon & Dalmas, Ornis, XI, 1901, p. 218 (Las Cruces).

Florisuga mellivora mellivora Hellm., P. Z. S., 1911, p. 1181 (Noanamá; Cajon).

Doubtless distributed throughout the larger part of the Tropical Zone though we failed to take it east of the Eastern Andes.

Noanamá, 1; Barbacoas, 5; Buenavista, Nariño, 1; Miraflores, 2; Puerto Berrio, 1.

(1075) **Agyrtria viridiceps** (*Gould*).

Thaumatias viridiceps Gould, P. Z. S., 1860, p. 307 (Ecuador).

A species heretofore known only from western Ecuador which Richardson secured in southwestern Colombia.

Ricaurte, 1.

(1085*a*) **Agyrtrina viridissima** subsp.

An adult male from Villavicencio apparently belongs to this group, but I have not material to determine its status. The tail is greenish with a blackish subterminal band and the three outer tail-feathers have small greenish tips.

(1086) **Agyrtrina fluvialitis** (*Gould*).

Thaumatias fluvialitis Gould, Introd. Trochil., 1861, p. 154 (Napo, Ecuador).

Found by us only in the Tropical Zone of Amazonian Colombia, whence it does not appear to have been previously recorded.

La Morelia, 1.

(1090) **Polyerata amabilis** (*Gould*).

Trochilus (?) *amabilis* Gould, P. Z. S., 1851, p. 115 (New Grenada).

Inhabits the Tropical Zone of the Pacific coast and eastward into Antioquia. In addition to the specimens listed below we have also an excellent series from Esmeraldas, Ecuador.

Puerto Valdivia, 3; Alto Bonito, 1.

(1091) **Polyerata rosenbergi** *Boucard.*

Polyerata rosenbergi Boucard, Gen. of Hummingbirds, 1895, p. 399 (Rio Dagua, Col.); Hellm., P. Z. S., 1911, p. 1181 (Nóvita; Juntas; Rio Condoto).

Known only from the Tropical Zone of the Pacific coast where it is apparently not uncommon.

Bagado, 1; Nóvita, 2; Noanamá, 1; Buenaventura, 4; San José, 1; Barbacoas, 6.

(1093) **Uranomitra franciæ** (*Bourc. & Muls.*).

Trochilus franciæ Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, IX, 1846, p. 324 (Bogotá).

Agyrtria franciæ Simon & Dalmas, Ornis, XI, 1901, p. 218 (La Tigra).

Uranomitra franciæ Boucard, The Hummingbird, V, p. 6 (Rio Dagua); Hellm., P. Z. S., 1911, p. 1182 (Pueblo Rico; Siato).

Our specimens are all from the Subtropical Zone of the Western and Central Andes.

San Antonio, 7; Las Lomitas, 2; Miraflores, 2; west of Honda, 2; La Candela, 1; San Agustin, 2.

(1096) **Lepidopyga goudoti** (*Bourc.*).

Trochilus goudoti Bourc., Rev. Zool., 1843, p. 100 (Ibagüe, Col.).

Cyanophaia goudoti, Stone, Proc. Acad. N. S., Phila., 1899, p. 305 (Ibagüe).

Apparently known only from the Tropical Zone of the upper Magdalena Valley.

Honda, 1; Chicoral, 3; near San Agustin, 1; Andalucia (3000 ft.), 1.

(1097) **Lepidopyga cœlina** (*Bourc.*).

Thalurania cœlina Bourc., Rev. et Mag. de Zool., 1853, p. 553 (Santa Marta, Col.).

This species appears to represent *L. goudoti* in the lower Magdalena Valley and west to the Atrato Valley. Apparently the ranges of the two forms are separated by the humid, forested region of the central lower Magdalena Valley.

Varrud, 1; Banco, 2; Calamar, 1; Algodonal, 1; Monquido, Chocó, 1.

(1101) **Saucerottia saucerottei** (*Delatt. & Bourc.*).

Trochilus saucerottei Delatt. & Bourc., Rev. Zool., 1846, p. 311 (Cali, Col.).

Saucerottea saucerotti Simon & Dalm., Ornis, XI, 1901, p. 221 (Cali; La Tigra; Las Cruces).

Inhabits the semi-arid Tropical Zone locally on the western slope of the Western Andes, the Cauca Valley and slopes arising from it.

Dabeiba, 3; Alto Bonito, 4; Caldas, 5; Las Lomitas, 1; San Antonio, 1; Cali, 9; La Manuelita, 1; Miraflores, 5; Rio Frio, 4.

(1102) **Saucerottia viridigaster** (*Bourc. & Muls.*).

Trochilus viridigaster Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, VI, 1843, p. 42 (Fusugasugá, Col.).

Inhabits open places in the Tropical Zone of the Eastern Andes. We found it only on the eastern slopes of the range though the type is said to have come from the western slope.

Quetame, 8; Buena Vista, 4; Villavicencio, 1.

(1111) **Amizilis tzacatl tzacatl** (*De la Llave*).

Trochilus tzacatl De la Llave, Registro Trimestre, II, No. 5, 1833, p. 48 (Mexico).

Amazilia riefferi Wyatt, Ibis, 1871, p. 378 (San Nicholas).

Amazillis fuscicaudata Allen, Bull. A. M. N. H., XIII, 1900, p. 139 (Bonda; Cacagualito).

Inhabits the Tropical Zone. The identification of Colombian specimens of *Amazilis tzacatl* is largely a matter of opinion. Deprive the specimens listed below of their labels and probably no two ornithologists would agree as to their proper names. Hellmayr (P. Z. S., 1911, p. 1183) restricts *A. t. jucunda* to western Colombia including Antioquia, and applies the name *A. t. fuscicaudata* (Fraser) to the form of eastern Colombia. Ridgway (Bull. U. S. N. M., 50, p. 409) restricts the name *jucunda* to specimens from western Ecuador and southwestern Colombia, and refers all other Colombian specimens to the Central American form *A. t. tzacatl.* With an abundance of material for examination, I incline to Ridgway's views. In specimens from the Bogotá region the bill averages smaller, but the character is by no means diagnostic and I cannot see any reason for recognizing an East Andean form.

Most of the specimens from western Colombia can be referred to one form quite as easily as to the other, but on general faunal principles I limit the range of *jucunda* to that part of the Pacific coast from the San Juan river southward, leaving the Atrato, lower Cauca and Magdalena Valleys as the home of *tzacatl*.

Dabeiba, 10; Puerto Valdivia, 2; Puerto Berrio, 1; west of Honda, 2; Fusugasugá, 1; "Bogotá region," 8.

(1112) **Amizilis tzacatl jucunda** (*Heine*).

Eranna jucunda Heine, J. f. O., XI, 1863, p. 188 (Babahoyo, Ecuador).

Amazilia riefferi Simon & Dalm., Ornis, XI, 1901, p. 221 (Naranjo).

Amazilia tzacatl jucunda Hellm., P. Z. S., 1911, p. 1183 (R. Sipi; Noanamá; Nóvita).

Tropical Zone of western Ecuador northward to the San Juan river in Colombia. Western Ecuador specimens average larger; the males have the abdomen tinged with rusty; females have this region paler than in *tzacatl*. I can detect no diagnostic differences in the color of the upper mandible. On the whole the Colombian birds are intergrades between *tzacatl* and *jucunda* and, as stated above, it is purely a matter of opinion where the line bounding the ranges of the two forms be drawn.

Juntas de Tamaná, 1; Noanamá, 1; San José, 1; Los Cisneros, 1; Las Lomitas, 1; Tumaco, 4; Barbacoas, 3.

(1119) **Hylocharis grayi** (*Delatt. & Bourc.*).

Eucephala grayi Simon & Dalm., Ornis, XI, 1901, p. 219 (Espinal de Dagua; Naranjo; El Carmen; La Tigra; Las Cruces).

Trochilus grayi Delatt. & Bourc., Rev. Zool., 1846, p. 307 (Popayan).

Hylocharis grayi Oberh., Proc. U. S. N. M., XXIV, 1902, p. 317 (Patia Valley).

Found in open and arid or semi-arid places at Caldas, in the Cauca Valley up to the borders of forest, and southward through the Patia Valley to northern Ecuador. It is apparently an arid-zone representative of *H. humboldti* which inhabits the humid coastal region.

Caldas, 1; San Antonio, 18; Cali, 2; Miraflores, 2; Popayan, 3; La Sierra, 1.

(1120) **Hylocharis humboldti** (*Bourc. & Muls.*).

Trochilus humboldti Bourc. & Muls., Ann. Soc. Agric. Lyon, Ser. 2, IV, p. 142 (Esmeraldas, Ecuador).

Eucephala humboldti Simon & Dalm., Ornis, XI, 1901, p. 219 (Buenaventura).

Found in the Tropical Zone of the Pacific coast from at least Buenaventura southward. Females differ from those of *H. grayi* chiefly in having the throat white, unspotted, the tail green.

Buenaventura, 2; Tumaco, 3.

(1136) **Damophila juliæ juliæ** (*Bourc.*).

Ornismya juliæ Bourc., Ann. Sci. Phys. et Nat. Lyon, V, 1842, p. 345. (Tunja, Col.).

Juliamyia juliæ Cass., Proc. Acad. N. S. Phila., 1860, p. 194 (Turbo).

Damophila juliæ Wyatt, Ibis, 1871, p. 378 (Aguachica); Stone, Proc. Acad. N. S. Phila., 1899, p. 306 (Ibagüe).

Represented only by a female from Honda.

(1141) **Chlorostilbon gibsoni** (*Fraser*).

Trochilus gibsoni Fraser, P. Z. S., 1840, p. 17 (no locality; Brabourne and Chubb "designate Colombia"; I add Chicoral, upper Magdalena Valley). Based on a female; the male = *T. angustipennis* Fraser, *l. c.* p. 18.

Found by us only in the Magdalena Valley and tributary valleys of the Central Andes, from the Tropical Zone upward to the lower border of subtropical forest.

West of Honda, 1; Chicoral, 3; Rio Toché, 3; San Agustin, 6.

(1142) **Chlorostilbon hæberlini** (*Reich.*).

Chlorestes hæberlini Reich., Hand. Orn. Troch. Enum., 1855, p. 4, pl. 703, figs. 4578–80 (Colombia; I suggest Bonda, Santa Marta).

Chlorostilbon hæberlini Wyatt, Ibis, 1871, p. 378 (Canta and Ocaña); Allen, Bull. A. M. N. H., XIII, 1900, p. 141 (Valencia; Bonda).

Inhabits the Caribbean Fauna where it apparently represents *C. gibsoni.*

La Playa, 1.

(1144) **Chlorostilbon melanorhynchus** *Gould.*

Chlorostilbon melanorhynchus Gould, P. Z. S., 1860, p. 308 (vicinity of Quito).

Chlorostilbon angustipennis Scl. &. Salv., P. Z. S., 1879, p. 531 (Medellin).

Chlorostilbon comptus Berl., Ibis, 1887, p. 297 (Antioquia).

Chlorostilbon pumilus Simon & Dalmas, Ornis, XI, 1901, p. 221 (Naranjo; La Tigra); Hellm., P. Z. S., 1911, p. 1183 (Pueblo Rico).

This species is widely distributed in western Colombia from the open or semi-arid tropics up to the subtropics of the Western and Central Andes.

Since this species occurs up to the borders of the tableland of Ecuador (Richardson secured it in the Valle de Cumbaza at an altitude of about 7000 feet on the slopes of Mt. Chimborazo) we are, I think, warranted in accepting the vicinity of Quito as an actual type-locality. 'Quito' skins agree with those from Cumbaza and the two series combined give what we may doubtless consider a representative series of true *melanorhynchus*. Using this series for comparison, I am unable to find any characters in our series of twenty-five adult males from western Colombia, by which the Colombian bird may be separated from the species I assume to be *melanorhynchus*. There are some slight geographic variations in size and color, birds from northwestern Colombia averaging smaller and possibly duller on crown and belly, but the differences are too inconstant to be of diagnostic value.

I have seen no authentic specimens of the bird known as *C. pumilus* Gould. The characters usually assigned to it, however, are covered by the variations shown by the series here under consideration.

Dabeiba, 5; Barro Blanco, 1; Caldas, 5; Las Lomitas, 5; San Antonio, 3; Cali, 3; Miraflores, 6; Popayan, 1; Cerro Munchique, 2; La Florida, 1; La Sierra, 1; Ricaurte, 4.

Measurements of Males.

Locality	Wing	Lat. rectr.	Med. rectr.	Bill
Colombia (16).	45.7	26.4	19.8	14.1
Valle de Cumbaza, Ec. (4).	47.0	26.0	20.9	14.4
Quito, " (3)	47.2	26.5	21.3	15.2
"Citado" (Buckley, 1)	46.5	27.0	22.0	15.0

(1153) **Chlorostilbon poortmani poortmani** (*Bourc. & Muls.*).

Ornismya poortmani Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, VI, 1843, p. 39 (Colombia).

Our specimens are from the upper margin of the Tropical Zone on the eastern slope of the Eastern Andes.

Quetame, 2; Buena Vista, 1.

(1168) **Thalurania fannyi fannyi** (*Delatt. & Bourc.*).

Trochilus fannyi Delatt. & Bourc., Rev. Zool., 1846, p. 310 (Rio Dagua near Buenaventura).

Thalurania fanniæ Simon & Dalm., Ornis XI, 1901, p. 221 (Buenaventura; El Paillon; Naranjo).

Thalurania fannyi Hellm., P. Z. S., 1911, p. 1183 (Pueblo Rico; Noanamá).

Inhabits the entire Pacific coast Tropical Zone, and ranges northward to eastern Panama (Tapalisa; Tacarcuna) and northeastward into the lower Cauca region of Antioquia. It ascends the Western Andes to the Subtropical Zone, Hellymayr (*l. c.*) recording it from Pueblo Rico (alt. 5200 ft.). Our specimens, however, from the Subtropical Zone of the Western Andes appear to be nearer *verticeps* and resemble Ecuadorian specimens of that species in their greener backs and shorter, less deeply forked tails.

My six adult males from Ecuador are all referable to *verticeps*. Unfortunately they are without locality and therefore throw no light on the distribution of this species in that country. Specimens from Buenavista, however, in southwestern Colombia near the boundary of Ecuador are referable to *fannyi*, and it is not improbable that the coastal form of humid northwestern Ecuador is *fannyi* while, as is apparently the case, in Colombia, the form of the Subtropical Zone is *verticeps*.

Two 'Bogotá' males of this species are interesting. They have the short tail and green back of *verticeps*, but the interscapular band is purple as in *fannyi*.

Alto Bonito, 2; La Vieja, 1; La Frijolera, 1; Juntas de Tamaná, 1; Buenavista, Nariño, 6.

(1169) **Thalurania fannyi verticeps** (*Gould*).

Thalurania verticeps Gould, Jard. Cont. Orn., 1851, pl. 107 ("Quito").

I refer two adult males and four females from the Subtropical Zone of the Western and Central Andes to this Ecuadorian form with which, as stated above, they more nearly agree than with the coastal race of Colombia. Measurements of males are appended.

Las Lomitas, 3; San Antonio, 3; La Frijolera, 1.

Measurements of Males.

Name	Locality	Wing	Tail	Bill
T. f. fannyi	Juntas de Tamaná	52	46	20
" " "	La Vieja	53	47	18.5
" " "	Alto Bonito (2)	53	45	19
" " "	Buenavista (5)	54.5	40.5	19
T. f. verticeps	Las Lomitas	54	37.5	18
" " "	San Antonio	53	34	17
" " "	'Bogotá'	52	41	18
" " "	'Ecuador' (3)	56	40	18.5

(1174) **Thalurania nigrofasciata** (*Gould*).

Trochilus ? nigrofasciata Gould, P. Z. S., 1846, p. 89 (Rio Negro).

Inhabits the Tropical Zone of the eastern base of the Eastern Andes. I have seen no topotypical specimens.

La Morelia, 1; Florencia, 1; Buena Vista, 1.

(1182) **Thalurania colombica colombica** (*Bourc.*).

Ornismya colombica Bourc., Rev. Zool., 1843, p. 2 (Colombia).

Thalurania colombica Wyatt, Ibis, 1871, p. 376 (Herradura); Stone, Proc. Acad. N. S. Phila., 1899, p. 306 (Ibagüe); Allen, Bull. A. M. N. H., XIII, 1900, p. 141 (Minca; Santa Marta; San Miguel; Palomina; Bonda; Oñaca; Cacagualito; Las Nubes; Valparaiso; El Libano).

Our specimens are all from the Subtropical slopes of the upper Magdalena Valley.

El Consuelo (above Honda), 1; Andalucia (3000 ft.), 2; San Agustin, 18; La Candela, 9.

(1183) **Chalybura buffoni buffoni** (*Less.*).

Trochilus buffoni Less., Hist. Nat. Troch., 1832, p. 31 pl. v ("Bresil" = Bogotá? *cf.* Hellm. & von Seil., Archiv für Naturg., 1912, p. 14).

Chalybura buffoni Simon & Dalmas, Ornis, XI, 1901, p. 222 (Naranjo).

Hypuroptila buffoni Allen, Bull. A. M. N. H., XIII, 1900, p. 141 (Manaure; Minca; Santa Marta; Bonda; Jordan; Cacagualito; Valparaiso).

Widely distributed from the Tropical Zone of the Pacific coast to the Eastern Andes and ranging upward to the lower border of the Subtropical Zone. Specimens from the Pacific coast differ from those from the Magdalena Valley (which may be considered essentially topotypical), in having less bronze in the tail and the underparts bluer green. They thus approach *C. cæruleogaster* of the eastern slopes of the Eastern Andes.

Peque, 2; Los Cisneros, 3; Salencio, 1; Rio Frio, 1; Miraflores, 1; La Candela, 3; San Agustin, 4; Andalucia (3000 ft.), 5; El Consuelo, 1.

(1185) **Chalybura cæruleogaster** (*Gould*).

Trochilus (*Glaucis ?*) *cæruleogaster* Gould, P. Z. S., 1847, p. 96 (New Grenada).

Our specimens are all from the eastern base of the Eastern Andes where this species appears to represent *C. b. buffoni* found by us only west of the eastern slope of this range.

Buena Vista, 2; Villavicencio, 2.

(1187) **Chalybura urochrysa** (*Gould*).

Hypuroptila urochrysa Gould, P. Z. S., 1861, p. 198 ("Panama"? *cf.* Hellmayr, *l. c.*).

Chalybura buffoni Scl. & Salv., P. Z. S., 1879, p. 529 (Remedios; Sta. Elena; *cf.* Hellm., *l. c.*).

Chalybura urochrysa HELLM., P. Z. S., 1911, p. 1184 (Sipi; Nóvita; Condoto; Rio Cajon).

Occurs throughout the Tropical Zone of the Pacific coast and eastward into Antioquia. While our specimens from Alto Bonito show no approach toward *C. isauræ,* of which we have a large series from eastern Panama (21) the latter appears to be the Panama representative of the Colombian bird. This probability added to the absence of authentic specimens from Panama makes it doubtful if *urochrysa* is found north of Colombia.

Alto Bonito, 2; Buenaventura, 2; Barbacoas, 1; Buenavista, Nariño, 3.

(1188) **Colibri delphinæ** (*Less.*).

Ornismya delphinæ LESSON, Rev. Zool., 1839, p. 44 (loc. unknown).

Petasophora delphinæ ALLEN, Bull. A. M. N. H., XIII, 1900, p. 140 (Minca; Santa Marta; Bonda).

Of this wide-ranging species we took but a single specimen.

Buenavista, Nariño, 1.

(1189) **Colibri cyanotus** (*Bourc. & Muls.*).

Trochilus cyanotus BOURC. & MULS., Ann. Sc. Phys. et Nat. Lyon, VI, 1843, p. 41 (Caracas, Ven.).

Petasophora cyanotis WYATT, Ibis, 1871, p. 377 (Canuto, 5000–6000 ft.); SCL. & SALV., P. Z. S., 1879, p. 530 (Sta. Elena); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 140 (Minca; San Sebastian; El Mamon; Valparaiso; El Libano).

Found by us only in open places in the Subtropical Zone. With the exception of a male from Cerro Munchique, all our specimens are from the Central Andes. The presence or absence of a violet or purple tinge on the abdomen, appears to be individual and is possibly due to age. The under tail-coverts, in our series, average more buffy than in a series from Merida, Venezuela. However, in some Colombian specimens the buff is reduced to a minimum, while, on the other hand, the specimen which has the buffiest under tail-coverts can be essentially matched by a Merida specimen. I cannot feel, therefore, that, so far as our series is concerned, this character is of diagnostic value. I am unable to appreciate the validity of the characters assigned to the Costa Rican bird "*Petasophora cabanidis* Heine" and thus agree with Ridgway (Bull. U. S. N. M., 50, p. 484).

Cerro Munchique, 1; El Eden, 1; Rio Toché, 9; Sta Elena, 4.

(1190) **Colibri iolata** (*Gould*).

Petasophora iolata Gould, P. Z. S., 1847, p. 9 (Bolivia); Allen, Bull. A. M. N. H., XIII, 1900, p. 140 (San Sebastian; Sierra Nevada; Macotama; San Miguel; El Mamon).

Petasophora anais Wyatt, Ibis, 1871, p. 378 (Herradura); Scl. & Salv., P. Z. S., 1879, p. 539 (Sta Elena; Medellin).

Found by us in the Subtropical Zone of all three ranges. I can detect no racial differences between our Colombia birds and an adequate series from Bolivia (Aplobamba; Yungas, 6000 ft.).

Cerro Munchique, 1; La Florida, 1; Popayan, 1; Almaguer, 3; Barro Blanco, 1; Buena Vista, 1.

(1194) **Anthracothorax nigricollis nigricollis** (*Vieill.*).

Trochilus nigricollis Vieill., N. Dict. d'Hist. Nat., VII, 1817, p. 349 ("Bresil").

Lampornis mango Cass., Proc. Acad. N. S. Phila., 1860, p. 123 (Carthagena); Wyatt, Ibis, 1874, p. 376 (Bucaramanga).

Lampornis violicauda Allen, Bull. A. M. N. H., XIII, 1900, p. 141 (Santa Marta; Bonda; Cacagualito; Masinga).

Doubtless distributed throughout the arid or semi-arid Tropical Zone east of the Western Andes. It appears to be unknown on the Pacific coast of Colombia, but a closely related form (*A. iridescens*) is found on the coast of Ecuador and *nigricollis* is found in Panama.

Cali, 3; Honda, 1; Villavicencio, 2.

(1199) **Chrysolampis elatus** (*Linn.*).

Trochilus elatus Linn., Syst. Nat., 1766, p. 102 (Cayenne).

Chrysolampis moschitus Cass., Proc. Acad. N. S. Phila., 1860, p. 194 (Carthagena). Wyatt, Ibis, 1871, p. 378 (Ocaña); Allen, Bull. A. M. N. H., XIII, 1900, p. 140 (Bonda).

Our specimens are from the open or arid Tropical Zone.

Caldas, 1; Dabeiba, 2; La Playa, 1.

(1201) **Simonula**[1] **berlepschi** (*Salv.*).

Anthocephala berlepschi Salv., Bull. B. O. C., III, 1893, p. 8 (Bogotá).

Our specimens were taken in the Subtropical Zone of the Central Andes.

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[1] Replacing *Anthocephala* Cab. & Hein., preoccupied. *Cf.* Chubb, Bds. Br. Guiana, I, 1916, p. 413.

Three native-made skins are said also to have come from the same range to which possibly *berlepschi* may be restricted.

Rio Toché, 3.

(1223) **Phaiolaima rubinoides rubinoides** (*Bourc. & Muls.*).

Trochilus rubinoides Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, IX, 1846, p. 322 (New Grenada).

Inhabits the Subtropical Zone of the Eastern Andes. In addition to the single specimen listed below we have a good series of 'Bogotá' skins.

El Roble, 1.

(1224) **Phaiolaima rubinoides æquatorialis** *Gould.*

Phæolæma æquatorialis Gould, Mon. Troch., IV, 1860, p. 269, pl. 264 (Ecuador).

Specimens from the Subtropical Zone of the Western Andes, and western slope of the Central Andes, while obviously to be referred to *æquatorialis* show, in some instances, characters which indicate the intergradation of this form with true *rubinoides.* Thus, three adult males from San Antonio, have the forehead narrowly glittering green of the same color as in *rubinoides,* and in one of these birds this color extends backward on the center of the crown as a fairly well-defined stripe. In the length of the bill the west Colombian examples agree with Ecuador specimens. Three females, two of which had the ovaries slightly enlarged, have a fairly well-developed throat-patch.

San Antonio, 5; Miraflores, 1; Salento, 2.

(1230) **Heliodoxa leadbeateri** (*Bourc. & Muls.*).

Trochilus leadbeateri Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, VI, 1843, p. 43 (Caracas).

Heliodoxa leadbeateri parvula Berl., J. für O., 1887, p. 320 (Bogotá).

Inhabits the Subtropical Zone of the Central and Western Andes. I can detect no differences in color or in size between our Colombian specimens and a male from Caracas. The bill in the Bogotá form, for which Berlepsch proposed the name *parvula* (*l. c.*) is said by Hartert to measure 18–19 rarely 20 mm., whereas in five males from the Bogotá region, selected at random, it measures 21–22 mm., the dimensions accredited to typical *leadbeateri.*

So far as my material goes, therefore, it gives no reason for the recognition of a Bogotá form. A female from La Frijolera, on the western slope of the Central Andes, near the northern limit of the range, is decidedly greener, less bronzy than others from La Candela. The culmen measures 22 mm.

La Frijolera, 1; La Candela, 9; San Agustin, 8; Quetame, 1; Buena Vista, 2.

(1239) **Helianthea helianthea** (*Less.*).

Ornismya helianthea Less., Rev. Zool., 1838, p. 314 (Bogotá).

Found by us only in the Temperate Zone of the Eastern Andes and on the eastern slope of the range.

Chipaque, 1.

(1240) **Helianthea bonapartei** (*Boiss.*).

Ornismya bonapartei Boiss., Rev. Zool., 1840, p. 6 (Bogotá).

Found by us only in the Temperate Zone of the Eastern Andes on the western slope of the range.

El Piñon, 2.

(1246) **Helianthea lutetiæ lutetiæ** (*Delatt. & Bourc.*).

Trochilus lutetiæ Delatt. & Bourc., Rev. Zool., 1846, p. 307 (Puracé, Col.).

Inhabits the Temperate Zone of the Central Andes which, as in other cases, thus carries northward the form found on the western slope of the Ecuadorian Andes.

Almaguer, 1; Laguneta, 5.

(1250) **Helianthea torquata** (*Boiss.*).

Ornismya torquata Boiss., Rev. Zool., 1840, p. 6 (Bogotá).
Bourcieria torquata Scl. & Salv., P. Z. S., 1879, p. 530 (Sta. Elena).

Inhabits chiefly the upper part of the Subtropical Zone in all three ranges, but in the Western Andes we found it only west of Popayan.

Cocal, 1; La Florida, 2; Cerro Munchique, 3; Andes w. of Popayan, 3; Salento (9000 ft.), 2; Rio Toché, 1; El Eden, 3; Sta. Elena, 5; El Roble, 6; El Piñon, 1.

(1255) **Helianthea cœligena columbiana** (*Elliot*).

Lampropygia columbiana Elliot, Ibis, 1876, p. 57 (vicinity of Bogotá).
Lampropygia cœligena Wyatt, Ibis, 1871, p. 378 (Canuto, 5000–6000 ft.).

Inhabits the Subtropical Zone in the Eastern Andes and eastern slope of the Central Andes. The differences between this bird, and our specimens of *cœligena*, are so pronounced as to suggest the specific distinctness of the Colombian and Venezuelan forms. In western Colombia *columbiana* is represented by a well-marked race which I describe below.

El Eden, 3; La Candela, 1; Andalucia, 2; Fusugasugá, 1.

(1255*a*) **Helianthea cœligena ferruginea** subsp. nov.

Lampropygia columbiana Scl. & Salv., (*nec* Elliot), P. Z. S., 1879, p. 530 (Frontino; Sta Elena; Medellin).

Homophania cœligena colombiana Simon & Dalmas (*nec* Elliot), Ornis, XI, 1901, p. 222 (La Tigra; Las Cruces).

Char. subsp.— Similar to *Helianthea cœligena columbiana* (Elliot) but underparts more strongly washed with tawny, the sides of the throat from the base of the bill to the breast tawny or russet; the throat with larger spots and less white, the whitish throat-area more sharply defined from the tawny or russet of the breast; the rump averaging greener.

Type.— No. 108816, Am. Mus. Nat. Hist., ♂ ad., San Antonio, alt. 6600 ft., Western Andes, above Cali, Colombia; March 30, 1911; F. M. Chapman.

Inhabits the Subtropical Zone of the Western Andes and of the Central Andes as far east as the Rio Toché at 6800 feet. The strongly marked characters of this form are well shown by all of our thirty-one specimens from the Western Andes and western slope of the Central Andes. Rio Toché specimens show some approach to *columbiana* and those taken at El Eden, above Ibagüe are clearly to be referred to that form.

San Antonio, 14; Cerro Munchique, 4; Miraflores, 3; Salento, 2; Rio Toché, 8.

(1267) **Lafresnayea lafresnayi** (*Boiss.*).

Trochilus lafresnayi Boiss., Rev. Zool., 1840, p. 8 (Bogotá).

Inhabits the Central and Eastern Andes ranging from the Subtropical upward to the Temperate Zone.

Santa Isabel, 1; Rio Toché, 2; El Eden, 1; El Roble, 1; El Piñon, 1; Chipaque, 1.

(1269) **Lafresnayea saül saül** (*Bourc.*).

Trochilus saül Bourc., Rev. Zool., 1840, p. 309 (vicinity of Quito).
Lafresnaya gayi Scl. & Salv., P. Z. S., 1879, p. 528 (Sta Elena); Allen, Bull. A. M. N. H., XIII, 1900, p. 138 (Macotama; San Miguel; Paramo de Chiruqua).

Andes w. of Popayan (10,340 ft.), 1.

(1271) **Ensifera ensifera ensifera** (*Boiss.*).

Ornismya ensifera Boiss., Rev. Zool., 1839, p. 354 (Bogotá).

Found in the Temperate Zone and upper part of the Subtropical on all three ranges. A female from Cerro Munchique on the Western Andes has the bill 88 mm. in length and possibly should be referred to *E. e. schliephackei* of Ecuador, provided this form be worthy of recognition (*cf.* Oberh., Proc. U. S. N. M., 1902, p. 327).

Cerro Munchique, 1; Almaguer, 2; Laguneta, 1; El Roble, 1.

(1272) **Pterophanes temmincki** (*Boiss.*).

Ornismya temmincki Boiss., Rev. Zool., 1839, p. 354 (Bogotá).

Santa Isabel (12,700 ft.), 1.

(1273) **Aglæactis cupripennis cupripennis** (*Bourc. & Muls.*).

Trochilus cupripennis Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, VI, 1843, p. 46 (Colombia).
Aglœactis cupreipennis Wyatt, Ibis, 1871, p. 377 (Vetas, 9000–10500 ft.).

A species of the Temperate Zone occurring in all three ranges. Judging from locality alone, our specimens should be referred to *A. c. æquatorialis* (Cab. & Hein.) but comparison of topotypical ('Bogotá') specimens of *cupripennis* with topotypical (Mt. Chimborazo) specimens of *æquatorialis* reveals no differences in color, and but a slight average difference in the length of the bill and, in my opinion, the proposed Ecuadorian race is not worthy of recognition. I have seen no specimens from Peru.

Andes w. of Popayan (10,340 ft.), 1; Valle de las Pappas, 2.

(1280) **Boissonneaua jardini** (*Bourc.*).

Trochilus jardinii Bourc., Compt. Rend., XXII, 1851, p. 187 (Nanegal?, Ec.).

Found by us only in the Western Andes where it is apparently rare. Our two specimens indicate that it ranges from 1200 to 7200 ft. They appear to be the first ones recorded from Colombia. The Nóvita Trail specimen, while immature, has considerably more iridescent purple on the throat than any of our Ecuadorian examples.

Nóvita Trail (7200 ft.), 1; Buenavista, Nariño, 1.

(1282) **Boissonneaua flavescens flavescens** (*Lodd.*).

Trochilus flavescens Lodd., P. Z. S., 1832, p. 7 (Popayan).

Panoplites flavescens Wyatt, Ibis, 1871, p. 376 (Oak forest, 7000–8000 ft.; Portrerras; between Cachiri and Cucuta Suratá); Scl. & Salv., P. Z. S., 1879, p. 529 (Medellin).

Boissonneaua flavescens flavescens Hellm., P. Z. S., 1911, p. 1185 (Tatamá Mt.).

Occupies the upperpart of the Subtropical Zone and lower border of the Temperate Zone in all three ranges.

Seventeen topotypical specimens from the Andes west of Popayan are intermediate between 'Bogotá' birds and Ecuadorian specimens (*B. f. tinochlora* Oberh.). They are, however, nearer to Bogotá birds, in which the greenish tip to the outer tail-feathers is reduced to the minimum, than they are to *tinochlora*. In other words, as with *Phaiolaima rubinoides*, West Andean birds, evidently by pure parallelism, have departed from the Ecuadorian type much as have the birds of the Eastern Andes, but in the Western Andes the differentiation has not yet been carried so far as it has in the Eastern Andes.

Cocal, 1; La Florida, 3; Cerro Munchique, 14; Almaguer, 2; Laguneta, 2; Andalucia, 1; El Roble, 2; El Piñon, 1.

(1288) **Vestipedes vestitus vestitus** (*Less.*).

Ornismya vestita Less., Rev. Zool. 1838, p. 314 (Bogotá).

Temperate and Paramo Zones of the Eastern Andes.

El Piñon, 4; Tocaimito, 2; Chipaque, 8.

(1289) **Vestipedes vestitus smaragdinipectus** (*Gould*).

Eriocnemis smaragdinipectus Gould, Ann. and Mag. Nat. Hist., Ser. 4, 1868, p. 322 (Quito).

Found by us in the Temperate Zone of the Central Andes. Our specimens are all from near the Ecuadorian boundary.

Almaguer, 4.

(1289*a*) **Vestipedes paramillo** sp. nov.

Char. sp.— Most nearly related to *Vestipedes vestitus smaragdinipectus* (Gould), but male with the purple throat-patch smaller, triangular in shape, as in *Vestipedes nigrivestris*, and entirely surrounded by glittering emerald-green; upperparts greener, less coppery, more uniform; rump slightly bluer; female greener, less coppery, throat-patch smaller and bluer, area about it greener; size smaller.

Type.— No. 133144, Am. Mus. Nat. Hist., ♂ ad., Paramillo, 12500 ft., W. Andes, Col., Jan. 29, 1915; Miller & Boyle.

Range.— Known only from the Paramo Zone at the northern end of the Western Andes of Colombia.

Description of Male.— Upperparts anteriorly uniform grass-green, becoming slightly bluer on the rump and vivid, glittering metallic brassy green on the upper tail-coverts; tail forked, uniform bluish black; wings purplish black, their lesser coverts green of the same color as the back; the greater coverts purplish black externally, tinged with green; lower wing-coverts washed with green; throat with a bluish-violet triangular patch, its apex reaching to the chin which, with the entire malar region and breast is, at the best angle of reflection, glittering metallic emerald-green; remainder of the underparts green of essentially the same color as the back, through which the blackish bases of the feathers appear to a greater or less extent; flanks fluffy, snowy white; under tail-coverts metallic purple of the same color as the throat; feet and bill black. Average of five specimens: Wing, 56.6; tail, 39.5; bill, 17.5 mm.

Description of Female.— Upperparts as in the male but more bronzy, the glittering upper tail-covert area somewhat less pronounced; the throat-patch more graduate, or circular, peacock-blue with grayish bases of the feathers showing through; surrounding green area decidedly more bronzy and less uniform on the chin, and more or less buffy basally; a buffy loral streak; remaining underparts of a paler green, more or less mixed with grayish, especially medianly; lower tail-coverts blue and with more grayish. Average of five specimens: Wing, 57; tail, 38.6; bill, 18.7 mm.

Remarks.— This species, which is based on seven males and six females, all from the type-locality, is an obvious representative of *Vestipedes vestitus*, but its differently shaped throat-patch and glittering green malar areas are more than differences of degree and, in my opinion, are of specific value.

The restricted area occupied by the Paramo Zone in the Western Andes, and the isolation of these areas from those occupied by the same zone in the Central Andes, prevent the range of this species from coming into contact with that of its nearest ally.

Paramillo, 13.

(1295) **Vestipedes mosquera** (*Delatt. & Bourc.*).

Trochilus mosquera Delatt. & Bourc., Rev. Zool., 1846, p. 306 (Pasto, Col.).
Eriocnemis mosquera bogotensis Hart., Nov. Zool., IV, 1897, p. 531 (Bogotá).

Inhabits the Temperate Zone of all three ranges. I can detect no racial differences between an essentially topotypical specimen of *mosquera* and several Bogotá skins.

Andes w. of Popayan (10,340 ft.), 1; Santa Isabel, 1.

(1297) **Vestipedes aureliæ aureliæ** (*Bourc. & Muls.*).

Trochilus aureliæ Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, IX, 1846, p. 315 (Bogotá).
Eriocnemis aureliæ Scl. & Salv., P. Z. S., 1879, p. 530 (Sta. Elena; Medellin).

Inhabits the Subtropical Zone of the Eastern Andes, and eastern slope of the Central Andes. A specimen from Barro Blanco near the northern end of the last-named range is typical.

Barro Blanco, 1; La Candela, 9; San Agustin, 1; El Roble, 1; El Piñon, 1.

(1298) **Vestipedes aureliæ caucensis** (*Simon*).

Eriocnemis aureliæ caucensis Simon, Rev. Fran. d'Orn., 1911, p. 130 (San Antonio, W. Andes, Col.).
Eriocnemis aureliæ Hellm., P. Z. S., 1911, p. 1185 (Pueblo Rico, 5200 ft.).

A common species in the Subtropical Zone of the Western Andes, and western slope of the Central Andes. Our large series of this race confirms its validity. In both sexes the abdomen is more extensively white than in *aureliæ*, and the anterior underparts are margined with whitish instead of buffy. In the female, the tawny tinge on the white tibial tuft, present in *aureliæ*, is wholly lacking in all but one of our specimens of *caucensis*.

San Antonio, 18; Cerro Munchique, 1; Gallera, 2; Andes w. of Popayan, 1; Miraflores, 6; Salento, 3.

(1305) **Vestipedes derbyi longirostris** (*Hart.*).

Vestipedes derbyi longirostris Hart., Nov. Zool., II, 1895, p. 69 ("Bogotá").

Found by us only in the Temperate and Paramo Zones near the northern end of the Central Andes. Comparison with the type of *derbyi*, and a series from Ecuador, shows that all our birds should be referred to the form described by Hartert, which differs from *derbyi* only in its longer bill. The comparative rarity of this long-billed race in Bogotá collections, the absence of definite records of it from the Ecuadorian Andes, and the fact that it is common at the northern end of the Central Andes, where true *derbyi* might be expected to occur, indicate in my opinion, that this species does not occur in the Eastern Andes and that Bogotá skins of it come from the Central Andes, probably from the Quindio trail region where our specimens were taken.

The culmen in five males measures 21.0 mm.; in five females, it measures 22.1 mm.

Laguneta, 15; Santa Isabel, 1;

(1307) **Ocreatus underwoodi underwoodi** (*Less.*).

Ornismya underwoodi Less., Hist. Nat. Troch., 1832, pl. 37, p. 105 (Bogotá).

Spathura underwoodi Wyatt, Ibis, 1871, p. 376 (Canuto); Simon & Dalmas, Ornis, XI, 1901, p. 223 (La Tigra; Las Cruces).

Steganura underwoodi Scl. & Salv., P. Z. S., 1879, p. 539 (Sta Elena; Medellin).

Ranges through the Subtropical Zone of all three ranges. Our large series from Colombia and Ecuador, shows that the males of the present race can be distinguished from *melanthera* only by their longer tails and larger terminal spatules. Bogotá females average less spotted below than those from Ecuador, but on the other hand, Cauca females, which approximately agree with those from the Bogotá region in size, are no more spotted below than those from Ecuador. The tail increases in length as one advances northward, ranging from 68 mm. in the Quito region, to 73 mm. at San Antonio, and 82 mm. at Salento and the Bogotá region.

Las Lomitas, 1; San Antonio, 10; Andes w. of Popayan, 1; Cerro Munchique, 1; La Florida, 1; Miraflores, 5; Salento, 7; La Candela, 4; San Agustin, 2; Aguadita, 1; Buena Vista, 1.

(1314) **Urosticte benjamini benjamini** (*Bourc.*).

Trochilus benjamini Bourc., Compt. Rend., XXXII, 1851, p. 187 (vicinity of Gualea, Ecuador).

Urosticte benjamini Hellm., P. Z. S., 1911, p. 1186 (La Selva, R. Jamaraya, 4600 ft.).

A female from Ricaurte is evidently to be referred to the Ecuadorian form rather than to *U. b. rostrata* described by Hellmayr (Verhand. Ornith. Gesell. in Bayern, XII, 1915, p. 125), from the San Juan river, western Colombia. The culmen measures 20 mm.

Ricaurte, 1.

(1319) **Adelomyia melanogenys melanogenys** (*Fraser*).

Trochilus melanogenys FRASER, P. Z. S., 1840, p. 18 (Bogotá).

Our specimens are from the Subtropical Zone of the Eastern Andes. I am unable to say what form is present at the head of the Magdalena Valley, but a specimen from El Eden, above Ibagüe, on the Magdalena slopes of the Central Andes, is typical of *cervina,* indicating the non-intergradation of that form with *melanogenys.*

Fusugasugá, 3; Quetame, 1.

(1323) **Adelomyia melanogenys cervina** *Gould.*

Adelomyia cervina GOULD, Ann. and Mag. Nat. Hist., Ser. 4, X, 1872, p. 453 (Medellin); SCL. & SALV., P. Z. S., 1879, p. 529 (Medellin); SIMON & DALMAS, Ornis, XI, 1901, p. 223 (La Tigra; Las Cruces).

Common in the Subtropical Zone of the Western and Central Andes, occurring on the eastern slope of that range.

Paramillo Trail, 1; San Antonio, 7; Cerro Munchique, 13; Andes w. of Popayan, 1; Almaguer, 1; Miraflores, 5; Salento, 2; above Salento, 1; Rio Toché, 2; El Eden, 2.

(1332) **Heliangelus exortis** (*Fraser*).

Trochilus exortis FRASER, P. Z. S., 1840, p. 14 (Guadas, Col.).
Heliotrypha parzudakii SCL. & SALV., P. Z. S., 1879, p. 529 (Sta. Elena).
Heliangelus exortis HELLM., P. Z. S., 1911, p. 1186 (Tatamá Mt.).
Heliangelus exortis soderstromi OBERH., Proc. U. S. N. M., 1902, p. 334 (female).

Common in all three ranges. In the Western and Central Andes it is restricted largely to the Temperate Zone, but in the Eastern Andes it occurs chiefly in the Subtropical Zone — an unusual case in distribution. Males from the three ranges agree in color. Those from the Central and Western Andes agree in size, but in three specimens from the Western Andes the tail appears to average shorter; but since our specimens from this region are in molt, measurements taken from them are not satisfactory.

Seven of eight immature females from the Central Andes have the white throat-patch thickly spotted with blackish, while five of six immature females from the Eastern Andes have this patch white without spots, and in the sixth there are but a few spots near the breast. Nine specimens collected by us, and sexed as females, have a throat-patch superficially resembling that of the male in color, but somewhat smaller and less solid, the feathers usually being whitish rather than grayish basally.

The correct sexing of these specimens is indicated by their small size and by the collector's comments on the condition of the sexual organs which were in one case much enlarged. These specimens have somewhat more brownish on the abdomen than adult males and are more bronzy above.

The type of *Heliangelus exortis soderstromi* Oberh. (Proc. U. S. N. M., 1902, p. 334), from western Ecuador, can be closely matched by these undoubted Colombian females, and although it is sexed "♂," and was 'collected' by Goodfellow and Hamilton, the skin resembles a native-made skin and is in my opinion that of a female. If this be true, the characters attributed to *H. e. soderstromi* are sexual, not racial.

Cerro Munchique, 2; La Florida, 1; Andes w. of Popayan, 4; Almaguer, 8; Salento, 1; Laguneta, 27; Santa Isabel, 3; Sta. Elena, 4; El Eden, 1; Fusugasugá, 7; El Roble, 8; El Piñon, 1.

Measurements of Males

		Wing	Tail	Bill
Cerro Munchique	(2)	62	43.5	14 mm.
Laguneta	(4)	62	47	15
Sta. Elena	(3)	63.5	47	15.5
Fusugasugá	(3)	63.5	48	14
El Roble	(3)	62.5	46.5	14.5

Measurements of Females

		Wing	Tail	Bill
Andes west of Popayan	(2)	58	43	15
Laguneta	(2)	58	41	15.5
El Roble	(5)	58	41	14.5

(1342) **Metallura williami** (*Delatt. & Bourc.*).

Trochilus williami Delatt. & Bourc., Rev. Zool., 1846, p. 308 (Popayan).

Found only in the Paramo Zone at the Central Andes. Bourcier's type, now in the American Museum, has the wing about four millimeters longer and the bill a millimeter shorter than in any bird of our series. The tail varies from greenish to purplish blue.

Valle de las Pappas, 1; Santa Isabel, 10.

(1348) **Metallura tyrianthina tyrianthina** (*Lodd.*).

Trochilus tyrianthinus Lodd., P. Z. S., 1832, p. 6 (Popayan).

Metallura tyrianthina Wyatt, Ibis, 1871, p. 377 (Bucaramanga to Pamplona, 9000 ft.); Scl. & Salv., P. Z. S., 1879, p. 529 (Sta. Elena).

Common in the Temperate Zone of all three ranges. Specimens from the Bogotá region agree with a topotypical series from the Popayan region, and both series differ from Ecuador (Pichincha) birds in their smaller size, shorter bill and greener, less brownish underparts.

Andes w. of Popayan (10,340 ft.), 15; Almaguer, 10; Laguneta, 10; Santa Isabel, 11; Sta. Elena, 7; El Eden, 1; El Piñon, 1; Chipaque, 5.

(1357) **Oxypogon stubeli** *Meyer.*

Oxypogon stubelii Meyer, Zeit. Ges. Orn., I, 1884, p. 204 (Tolima, Cen. Andes, Col.).

Of this rare species, heretofore known only from the type, a female, Allen and Miller secured a pair on Santa Isabel (alt. 12,700 ft.) the type-locality. The male bears a general resemblance to *O. guerini* of the Eastern Andes, which it evidently represents, but has the elongated feathers of the crown more tawny, the underparts generally more rufescent, outer web (except at the base), tip, shaft, and a narrow strip along the shaft on the inner web of the outer tail-feather ochraceous-buff; an ochraceous-buff shaft-streak on the remaining tail-feathers. The metallic throat-plumes are in molt, but it is apparent that those of the chin would have been green, while the longer plumes would have been orange-purple.

Santa Isabel, 2.

(1358) **Chalcostigma herrani** (*Delatt. & Bourc.*).

Trochilus herrani Delatt. & Bourc., Rev. Zool., 1846, p. 309 (Pasto, Col.).

A Temperate Zone species apparently confined to the Western Andes.

Andes w. of Popayan, 3.

(1359) **Chalcostigma heteropogon** (*Boiss.*).

Ornismya heteropogon Boiss., Rev. Zool., 1839, p. 355 (Bogotá).
Ramphomicron heteropogon Wyatt, Ibis, 1871, p. 377 (Vetas, 9000–10,500 ft.).

Known only from the upper Temperate and Paramo Zones of the Eastern Andes.

Tocaimito, 2.

(1366) **Ramphomicron microhynchum** (*Boiss.*).

Ornismya microhyncha Boiss., Rev. Zool., 1839, p. 354 (Bogotá).

Inhabits the Temperate Zone of all three ranges.

Paramillo, 1; Andes w. of Popayan, 6; Almaguer, 1; Laguneta, 3; Santa Isabel, 2; El Roble, 2; El Piñon, 1.

(1368) **Opisthroprora euryptera** (*Lodd.*).

Trochilus eurypterus Lodd., P. Z. S., 1832, p. 7 (Popayan).

A female from the Temperate Zone near the type-locality.

Almaguer, 1.

(1373) **Cyanolesbia kingi kingi** (*Less.*).

Trochilus kingi Less., Hist. Nat. Troch., 1382, p. 107, pl. 83 ("Jamaique" = Bogotá).

Cyanthus cyanurus Wyatt, Ibis, 1871, p. 377 (Canuto).

Inhabits the Subtropical Zone of the Eastern Andes in the Bogotá region and northward at least to Bucaramanga.

The distribution of the forms of the genus *Cyanolesbia* in Colombia and the characters they exhibit, present a problem in regard to their relationships which I confess I am unable satisfactorily to solve. All are confined to the Subtropical Zone, and the occurrence of the green-throated *C. emmæ* and the purple-throated *C. cœlestis* in this zone, in the Western Andes, in one instance at localities practically within sight of each other, is evidence of the specific distinctness of these forms. At no other place, it must be stated, have we found the green and the blue-throated forms so nearly associated; but on the other hand, our large series of males do not show one intermediate specimen. Thus not one of thirteen males of *emmæ* from western Colombia, and twenty-six males of *caudata* from Merida, shows any trace of a purple throat-patch. With equal truth it may be said that twenty-two males of *C. mocoa,* eight of *cœlestis,* five of *kingi,* and two of *margarethæ,* all possess the purple throat-patch.[1]

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[1] Hartert, in his first review (Nov. Zool., I, 1894, p. 47) of this genus reached conclusions in regard to the relationships of its forms essentially similar to those I here present; but subsequently (Nov. Zool., V, 1898, p. 514) he treated them all, except *berlepschi* and *cœlestis*, as subspecies. Lack of proper data accompanying his species prevented Hartert in some instances from giving correct ranges. For the same reason his remarks in regard to specimens of *emmæ* with "blue" on the throat lose point since it is not impossible that these birds came from the range of *mocoa* and hence should be referred to that species.

Of *caudata* he states that not one among about one hundred adult males from Merida showed "even an indication of a blue spot on the throat." Nevertheless, he treats this bird as a subspecies of *kingi!*

This constancy of marking, and the fact that in at least one range of the Andes, the green-throated and purple-throated forms occupy the same zone, lead me to believe that we have here two distinct species both of which present somewhat similar subspecific variations.

Cyanolesbia berlepschi from northeastern Venezuela I have not seen. Its description Hartert (Bull. B. O. C., VIII, 1898, p. XVI) shows that the male closely resembles the male of *kingi*, but the female differs from that of any known species in having the abdomen wholly white. It is, therefore, nearer to the female of *cœlestis* in which the breast is white, than to that of the remaining species of the group.

All of these are well represented in our collections, and a study of their variations in connection with the information we have gathered concerning the faunal affinities of the regions they inhabit, leads me to group them as below:

Key to Males.

- Throat green
  - Tail green — *C. emmæ*
    (Western and Central Andes, Col.).
  - Tail blue — *C. caudata*
    (Western Andes, Ven.)
- Throat purple or bluish
  - Tail green
    - Throat purple — *C. mocoa mocoa*
      (Andes at head of Magdalena Valley southward in Eastern Andes to Ecuador).
    - Throat bluish — *C. mocoa smaragdina*
      (Bolivia; Peru).
  - Tail blue
    - Underparts green
      - Upperparts darker green — *C. kingi kingi*
        (Eastern Andes — Bogotá Region, Col.)
      - Upperparts lighter green — *C. kingi margarethæ*
        (Caracas region, Ven.).
    - Underparts coppery — *C. cœlestis*
      (Western Andes of Colombia and Ecuador).

I observe no evidence of the intergradation of *kingi* with *mocoa* as is stated more fully under that species; but *margarethæ* of the mountains about Caracas is an obvious racial representative of the Bogotá form from which it differs but slightly.

Whether the ranges of *margarethæ* and *kingi* are actually separated by a region (Merida) in which the green-throated *caudata* alone occurs is not known.

El Roble (8000 ft.) above Fusugasugá, 4; Choachi, 1.

(1374) **Cyanolesbia emmæ** *Berl.*

Cyanolesbia emmæ BERL., Journ. für Orn., 1892, p. 452 (Bogotá and Antioquia = Dept. Antioquia); SIMON & DALMAS, Ornis, XI, 1901, p. 223 (Las Cruces).
Cyanthus mocoa SCL. & SALV., P. Z. S., 1879, p. 529 (Sta. Elena).

Inhabits the Subtropical Zone of the Western Andes and at least the northern end (both slopes) of the Central Andes. In the Western Andes its range appears to coincide with that of *C. cœlestis*. We have specimens of *emmæ* from Gallera and of *cœlestis* from the nearby Cerro Munchique.

Our large series of *emmæ* shows little individual variation and no indication of intergradation with other forms. In the Merida region *emmæ* is represented by *C. caudata* from which, however, it appears to be specifically distinct.

San Antonio, 6; Cerro Munchique, 9; Salento, 2; Sta. Elena, 1; El Eden, 1.

(1375) **Cyanolesbia mocoa mocoa** (*Delatt. & Bourc.*).

Trochilus mocoa DELATT. & BOURC., Rev. Zool., Sept. 1846, p. 311 (Mocoa, Col.).

Inhabits the Subtropical Zone of the slopes of the Central and Eastern Andes, arising from the upper Magdalena Valley and southward along the Eastern Andes through Ecuador probably to northern Peru.

The localities at which our twenty-three specimens of this bird were taken have a close faunal affinity, indeed almost identity, with the region in the same zone about the city of Bogotá (Fusugasugá; El Roble, etc.). Nevertheless our specimens indicate that *mocoa* and *kingi* do not intergrade.

Specimens from "Ambato" (= e. Ecuador) are referable to *mocoa*. Of the shorter-tailed, blue-throated *smaragdina* we have four specimens from Incachaca in the Subtropical Zone of the Cochabamban Yungas, Bolivia.

La Palma, 2; La Candela, 18; near San Agustin, 2.

(1379) **Cyanolesbia cœlestis** (*Gould*).

Cyanthus cœlestis GOULD, Introd. Trochil., 1861, p. 102 (Ecuador).
Cyanolesbia kingi subsp. HELLM., P. Z. S., 1911, p. 1187 (Tatamá Mt., 4600 ft.).

Inhabits the Subtropical Zone of the Western Andes, and southward into western Ecuador, where it evidently represents *C. kingi*. Males and females from southwestern Colombia agree with Ecuador specimens; but males from Nóvita Trail and Tatamá Mt. (*cf.* Hellm., *l. c.*) in their greener underparts approach *kingi*. I have seen no females from this part of Colombia and cannot therefore say whether the marked characters exhibited by this sex also show a racial variation toward the female of *kingi*.

Nóvita Trail, 2; Gallera, 5; Ricaurte, 1.

(1386) **Psalidoprymna victoriæ victoriæ** (*Bourc. & Muls.*).

Trochilus victoriæ Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, IX, 1846, p. 312 (New Grenada).

Lesbia amaryllis Wyatt, Ibis, 1871, p. 376 (Pamplona; Vẹtas, 9000 ft.).

Our single specimen is from the Temperate Zone near Bogotá.

Chipaque, 1.

(1393) **Psalidoprymna gouldi gouldi** (*Lodd.*).

Trochilus gouldi Lodd., P. Z. S., 1832, p. 7 (Popayan).

A female from the Bogotá Savanna.

Sibaté, 1.

(1400) **Schistes geoffroyi** (*Bourc. & Muls.*).

Trochilus geoffroyi Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, VI, 1843, p. 37, pl. iii ("La Vallee de Canca [*sic*] près de Carthagene, dan la Colombie).

All the Colombian skins I have seen of this species appear to be from the Bogotá region where alone we found it. In the Cauca Valley we collected only the representative species *S. albogularis*, a fact which indicates that the type-locality given for *geoffroyi* is incorrect.

El Roble, 1.

(1401) **Schistes albogularis** *Gould.*

Schistes albogularis Gould, Cont. Orn., 1851, p. 140 (Pichincha, Ecuador).

Inhabits the Subtropical Zone of the Western Andes, and western slope of the Central Andes.

Las Lomitas, 1; San Antonio, 1; Miraflores, 1.

(1405) **Heliothryx barroti** (*Bourc. & Muls.*).

Trochilus barroti Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, VI, 1843, p. 48 ("Carthagène dans la Colombie").

Heliothryx barroti Scl. & Salv., P. Z. S., 1879, p. 529 (Remedios); Hellm., *Ibid.*, 1911, p. 1186 (Noanamá; Nóvita).

In Colombia this bird appears to be restricted to the Tropical Zone of the Pacific coast, and humid lower Cauca-Magdalena region whence it ranges southward to western Ecuador and northward to Guatemala. The type-locality is obviously incorrect. Doubtless the type came through Carthagena from the humid region south of that port.

Chocó, 1; Juntas de Tamaná, 1; Noanamá, 1; San José, 5; Barbacoas, 5.

(1413) **Anthoscenus longirostris stewartæ** (*Lawr.*).

Heliomaster stewartæ Lawr., Ann. Lyc. N. Y., VII, 1860, p. 107 (Bogotá).

Floricola longirostris Allen, Bull. A. M. N. H., XIII, 1900, p. 139 (Bonda; Cacagualito).

Found in the open or semi-arid Tropical Zones. Compared with topotypical (Trinidad) specimens of *A. l. longirostris*, Colombian birds appear to average darker below, but our material is not conclusive on this point. It does, however, show that in Colombian birds the bill averages shorter and perhaps for this reason alone a Colombian race may be recognized. Measurements of the culmen in the males are appended.

Trinidad (4), 30–32; *Venezuela:* Bermudez, (2), 30.5–31.00; *Colombia:* Santa Marta (2), 33–35; 'Bogota' (2), 35–36; Honda, 36; San Agustin, 36; Cali (2), 33–36 mm.

Cali, 3; San Agustin, 1; Honda, 1; El Consuelo, 1.

(1419) **Calliphlox mitchelli** (*Bourc.*).

Trochilus mitchelli Bourc., P. Z. S., 1847, p. 47 ("Zimapan").

Appears to be restricted to the Pacific coast where it ranges from sea-level up to at least 5700 feet. The only "Zimapan" I have been able to find is in Hidalgo, Mexico. If there be no other, Bourcier's type-locality is evidently incorrect.

Gallera, 2; Barbacoas, 3.

(1420) **Chætocercus mulsanti** (*Bourc.*).

Ornismya mulsanti Bourc., Ann. Sc. Phys. et Nat. Lyon, V, 1842, p. 34, pl. 20 (Colombia).

Acestrura mulsanti Scl. & Salv., P. Z. S., 1879, p. 529 (Medellin).

Barro Blanco, 1 ♀.

(1421) **Chætocercus heliodor** (*Bourc.*).

Ornismya heliodor Bourc., Rev. Zool., 1840, p. 275 (Bogotá).

I am unable to discover any constant difference either in form or color between topotypical females of *Chætocercus heliodor* and *C. bombus.* Wholly on geographical grounds, therefore, I refer a female from San Agustin to the former. A female from Miraflores on the western slope of the Central Andes, cannot, however, be disposed of so satisfactorily, since the locality has faunal affinities with both Ecuador and the Eastern Andes. Under the circumstances, I can see no valid reason for the generic separation of *C. bombus* (see Oberholser, Proc. U. S. N. M., 1902, p. 341, remarks under "*Polyxemus bombus*") since the characters ascribed to it are sexual rather than generic.

San Agustin, 1; ?Miraflores, 1.

(1431) **Klais guimete** (*Bourc. & Muls.*).

Trochilus guimete Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, VI, 1843, p. 88, pl. ii (Colombia).

Found by us only in the Subtropical Zone of the Eastern Andes.

Andalucia, 1; Buena Vista, 3.

(1443) **Popelairia conversi** (*Bourc. & Muls.*).

Trochilus conversi Bourc. & Muls., Ann. Sc. Phys. et Nat. Lyon, IX, 1846, p. 13 (Bogotá).

I can find no constant racial differences between our Pacific coast specimens and others from Bogotá. Ecuador specimens (*P. c. æquatorialis* Berl.), which our Pacific coast birds might be expected to resemble, are not available.

Noanamá, 1; Barbacoas, 5.

ORDER **TROGONES.**

FAMILY TROGONIDÆ. TROGONS.

(1451) **Pharomachrus antisiensis** (*d 'Orb.*).

Trogon antisiensis d'ORB., Voy. Amer. Merid., Ois., 1835–1844, p. 38, pl. 66, fig. 1 (Yungas, Bolivia).

Inhabits the Subtropical Zone, doubtless of all three ranges, but it is far less common that *P. auriceps* and we secured specimens only in the Western and Eastern Andes. I have seen no Bolivian examples.

San Antonio, 2; Buena Vista, 1.

(1452) **Pharomachrus auriceps** (*Gould*).

Trogon auriceps GOULD, Ann. & Mag. N. H., IX, 1842, p. 238 ("Quito").

Pharomacrus auriceps WYATT, Ibis, 1871, p. 375 (near Portreras); SCL. & SALV., P. Z. S. 1879, p. 535 (Concordia; Frontino; Sta. Elena).

Pharomachrus pavoninus STONE, Proc. Acad. N. S. Phila., 1899, p. 305 (Nevada del Tolima).

Inhabits the Subtropical Zone of all three ranges. It was common in the Western and Central Andes, but we found it to be rare in the Eastern Andes. Our specimens agree with others from Ecuador.

San Antonio, 8; Cerro Munchique, 1; La Florida, 4; Almaguer, 1; Miraflores, 5; Salento, 3; Subia, 1.

(1456) **Pharomachrus pavoninus** (*Spix*).

Trogon pavoninus SPIX, Av. Bras., 1, 1824, p. 47, pl. 35 ("in sylvis Tabatingæ et Maribitanas").

Miller secured a male of this apparent zonal representative of *P. auriceps* at Florencia in the Caquetá region, thereby adding the species to the known Colombian avifauna.

Florencia, 1.

(1457) **Trogonurus personatus** (*Gould*).

Trogon personata GOULD, Ann. & Mag. Nat. Hist., 1842, p. 237 ("The Cordillerian Andes." Specimen "*c*." from "Peru" listed as type in Cat. B. M., XVII, p. 447).

Trogon personatus Wyatt, Ibis, 1871, p. 375 (7000 to 8500 ft., Canuto to Cachiri); Allen, Bull. A. M. N. H., XIII, 1900, p. 135 (Valparaiso; Las Nubes; Libano; Chirua; La Concepcion; Macotama).

This species occupies chiefly the Subtropical Zone of all three ranges. My single Peruvian specimen, a female from Inca Mine, has the wing-coverts vermiculated with brown and blackish and may therefore be considered as representing this species. Colombian females essentially agree with it but have the outer tail-feathers less broadly tipped with white. I have no males from Perü but our Colombian males agree with three figures in Gould's Monograph (2d ed.) which are said to represent the type.

Puerto Valdivia, 1; La Frijolera, 1; Cocal, 2; Gallera, 1; Sta. Eleña, 1; El Eden, 2; Fusugasugá, 1; Enconosa (near Bogotá) 1.

(1457*a*) **Trogonurus assimilis** (*Gould*).

Trogon assimilis Gould, P. Z. S., 1846, p. 67 (Peru).

Inhabits the Temperate Zone in the Western, Central and Eastern Andes, where it appears to be a zonal representative of *T. personatus* of the Subtropical Zone. Eleven males differ from a large Colombian series of *personatus* chiefly in the much less pronounced, more broken and, in some cases, almost obsolete white bars on the three outer pairs of rectrices and in having bluer reflections on anterior parts of the crown and breast, and a smaller bill. In the markings of the tail they thus seem to agree with Gould's description of *assimilis.* Seven females, however, differ from Gould's description of the female of *assimilis,* and in a like manner from the female of *personatus,* in having the wing nearly similar *in color* as well as in markings to that of the male. The lesser coverts are tinged with brown, but the remaining coverts and exposed portions of the inner wing-quills are minutely marked with blackish and white, exactly as they are in the male, and all but the three outer quills are conspicuously white at the base. Except in having somewhat less white in the tail and a smaller bill, these birds in other respects agree with the female of *personatus.* One of our specimens has the ovaries considerably enlarged. There can, therefore, be no question of its sex.

In the absence of specimens from Peru I provisionally accept Gould's name for the species. It is true that he described the female of *assimilis* as having the "coverts and secondaries freckled with yellowish brown instead of gray", but it is not improbable that in the absence of exact data, or none at all, he may have had in hand a female of *personatus.*

Paramillo Trail (11,000 ft.), 1; Laguneta, 7; Santa Isabel, 2; Almaguer, 5; Valle de las Pappas, 2; El Piñon, 1.

(1458) **Trogonurus collaris** (*Vieill.*).

Trogon collaris Vieill., Nouv. Dict. d'Hist. Nat., VIII, 1817, p. 330 (Cayenne); Scl. & Salv., P. Z. S., 1879, p. 534 (Concordia; Frontino; Sta. Elena); Stone, Proc. Acad. N. S. Phila., 1899, p. 305 (Nevada de Tolima; R. Combeima).

Inhabits the Subtropical Zone of all three ranges. I have no topotypical material for comparison.

La Frijolera, 2; Las Lomitas, 2; San Antonio, 11; Andes w. of Popayan (9000 ft.), 2; Cocal, 4; La Florida, 1; Miraflores, 3; Salento, 2; El Eden, 2; Cen. Andes w. of Honda (5000 ft.), 2; La Candela, 3; Andalucia (w. slope, 5000 ft.), 3; Buena Vista, 1.

(1462*a*) **Trogonurus curucui cupreicauda** *Chapm.*

Trogonurus curucui cupreicauda Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 606 (Bagado, Chocó, Col.).

Trogon atricollis Cass., Proc. Acad. N. S. Phila., 1860, p. 136 (R. Truando); Wyatt, Ibis, 1871, p. 374 (Naranjo); Scl. & Salv., P. Z. S., 1879, p. 535 (Remedios; Neché).

Char. subsp.— Male most nearly resembling *T. curucui curucui* but exposed upper portions of six inner tail-feathers rich copper-bronze (as in *T. ambiguus*), in some specimens with, in others without, greenish reflections; bars of three outer pairs of tail-feathers wider, as in *T. c. tenellus;* wing-coverts more broadly barred; no white evident at the junction of green breast with orange abdomen; resembles *T. c. tenellus* in the barring of the outer tail-feathers and wing-coverts, but differs in its copper-bronze tail, absence of white pectoral band, and more deeply colored abdominal region.

Female most like *T. c. curucui* but wing-coverts apparently more widely barred; the abdomen more deeply colored than in *T. c. tenellus*, the wing-coverts more broadly barred, the breast, at junction of brown and orange, without, or with but a slight indication of the conspicuous white or grayish pectoral band.

A Tropical Zone species which extends from the Pacific Coast eastward through the humid lower Cauca and Magdalena Valleys.

I am in doubt as to the identity of an adult male from La Morelia in the Caquetá region. It has the tail more coppery than in the most extreme specimen of *cupreicauda,* there is a more evident white pectoral band, and the wing-coverts are less broadly barred, but in other respects it agrees with the Pacific coast bird.

Alto Bonito, 3; Baudo, 2; Bagado, 1; Juntas de Tamaná, 1; San José, 1; Barbacoas, 6; Puerto Valdivia, 1; west of Honda, 1.

(1467) **Trogonurus bolivianus** (*Grant*).

Trogon bolivianus Grant, Cat. Bds. B. M. XVII, 1890, p. 470, pl. xv, (Cosnipata, Peru).

Two males and a female from the Caquetá region should apparently be referred to this species. They agree with an "Ecuador" specimen and differ from a male from the lower Beni in Bolivia only in the practical absence of the white pectoral zone. Hellmayr (Nov. Zool., XV, 1908, p. 88) suggests that *bolivianus* is a synonym of *behni* Gould. Grant, however, lists Gould's type under *Trogon variegatus* and examination of Gould's figure and description (Mon. Trog. 2nd Ed. 1875, pl. 20) confirms this view of its relationships. In spite of the fact, therefore, that the type of *behni* is said to have come from Bolivia and that our specimens from the Lower Beni agree closely with others from Napo and southeastern Colombia, I accept Grant's name for the more western bird. Four males (one each from La Morelia, near Florencia, "Ecuador," and the Lower Beni) differ from nine others from Chapada, Matto Grosso, which I assume to be *variegatus,* in having the back much greener, less bronzy, the breast bluer, the white pectoral zone less pronounced or absent, the white bars in the tail narrower and black ones correspondingly wider. A female from the lower Beni has an indication of the white pectoral zone, but it is by no means so pronounced as in a Chapada female. The white in the tail of the Beni specimen is practically confined to the outer margins of the three outer feathers, except for a very narrow tip, whereas in the Chapada bird it extends to the inner web and the tip is much broader. A female from La Morelia has no white in the breast and even less in the tail than the Beni bird. Doubtless the latter to some extent approaches *variegatus* but so far as the present material goes it is unquestionably referable to *bolivianus.*

La Morelia, 2; near Florencia, 1.

(1461) **Trogon strigilatus strigilatus** *Linn.*

[*Trogon*] *strigilatus* Linn., Syst. Nat., 1766, p. 167 (Cayenne) = *T. viridis* Auct. *cf.* Ridgw., Bull. 50, V, p. 751.

Inhabits the Tropical Zone at the eastern base of the Eastern Andes. Our seven specimens agree with a series from British Guiana and Trinidad.

La Morelia, 1; Florencia, 4; Villavicencio, 1; Buena Vista, 1.

(1462) **Trogon strigilatus chionurus** *Scl. & Salv.*

Trogon chionurus Scl. & Salv., P. Z. S., 1870, p. 843 (Lion Hill, Panama); Wyatt, Ibis, 1871, p. 374 (Paturia; Scl. & Salv., P. Z. S., 1879, p. 535 (Remedios; Neché).

Trogon melanopterus Cass., Proc. Acad. N. S. Phila., 1860, p. 136 (R. Truando).

Occupies the humid Tropical Zone west of the Eastern Andes. Our species agrees with others from Panama including the type of *T. eximius* Lawr.

Salaqui, 1; Dabeiba, 1; Alto Bonito, 3; Bagado, 1; Juntas de Tamaná, 3; San José, 1; Barbacoas, 6; Puerto Valdivia, 4; west of Honda (1500 ft.), 2.

(1463*a*) **Chrysotrogon caligatus columbianus** *Chapm.*

Chrysotrogon caligatus columbianus Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 607 (Opon, Col.).

Trogon caligatus Wyatt, Ibis, 1871, p. 374 (Naranjo); Allen, Bull. A. M. N. H., XIII, 1900, p. 135 (Cacagualito; Minca).

Char. subsp.— Resembling *C. c. caligatus* (Gould) of Central America in the vermiculation of the wings and feathering of the tarsus, but with the head blue or purplish as in *C. violaceus* (= *meridionalis*) and *C. ramonianus;* size, particularly of bill, smaller than in allies. Wing, 106; tail, 116; bill from nostril, 10 mm.

A Tropical Zone species known only from the humid Cauca-Magdalena region and northward to Santa Marta.

It will be observed that this form to some extent bridges the gap between *caligatus* and *violaceus* and, in spite of the differences in the feathering of their tarsi, it seems not improbable that these two forms will be found to intergrade. There is less difference in size between specimens from Nicaragua and Ecuador, than there is between those from the Caribbean Coast of Colombia at Santa Marta and the Magdalena Valley. The Santa Marta birds, however, are geographically interposed between Panama and Trinidad, while the Magdalena River form (true *columbianus*) is an isolated offshoot removed from the direct line of geographical intergradation.

Puerto Valdivia, 1; Honda, 1; Opon, 2; Puerto Berrio, 1.

(1465) **Chrysotrogon ramonianus** (*Dev. & Des Murs*).

Trogon ramoniana Dev. & Des Murs, Rev. Zool., 1849, p. 331 (Sarayacu, Ecuador).

On geographical grounds I refer to this species (of which we have a male from Napo) a female from Florencia in the Caquetá region.

Florencia, 1.

(1470) **Curucujus melanurus melanurus** (*Swains.*).

Trogon melanurus Swains., Anim. in Menag., III, 1838, p. 329 (Demerara, Brit. Guiana).

Two males from Florencia are slightly smaller than a male from British Guiana and have the bill less stout (see measurements under *C. m. macrourus*), and in color they are somewhat more brassy above, but these differences are doubtless in part individual.

Florencia, 2.

(1471) **Curucujus melanurus macrourus** (*Gould*).

Trogon macroura Gould, Monog. Trog. Ed. 1, 1838, pl. 17, ("Mexique"; Caracas, Venezuela).

Trogon macrourus Cassin, Proc. Acad. N. S. Phila., 1860, p. 135 (Rio Truando; delta Atrato).

Trogon macrurus, Scl. & Salv., P. Z. S., 1879, p. 535 (Remedios and Neché).

Inhabits the humid Tropical Zone of the Atrato and Magdalena Valleys. When he described this bird Gould was evidently unaware of its range, but in the second edition of his Monograph of the Trogons (1875) he writes: "I doubt whether it is to be found beyond the district included between the lower region of the river Magdalena and the Isthmus of Panama as far as the base of the mountainous region of Veragua." So far as Colombia is concerned, this statement is approximately correct but the species does not appear to have been recorded from west of the Canal Zone in Panama. Singularly enough the west Ecuadorian form of this species is, or is very near, *C. m. melanurus* of Amazonia.

Some difficulty is experienced in distinguishing females of *macrourus* from females of *C. massena australis*, but *macrourus* has a relatively longer tail which is longer instead of shorter than the wing, the bill is usually shorter and relatively narrower, and the wing-coverts and inner wing-quills are as a rule more strongly vermiculated with white than in *australis*, some individuals of which are wholly without these white markings on the wings.

R. Salaqui, 2; R. Atrato, 2.

(1472) **Curucujus massena australis** *Chapm.*

Curucujus massena australis Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 384, (Barbacoas, Col.).

?*Trogon massena* Cass., Proc. Acad. N. S. Phila., 1860, p. 135 (R. Truando; delta Atrato); Hellm., P. Z. S., 1911, p. 1193 (Noanamá).

Char. subsp.— Similar to *C. m. massena* but smaller, male with exposed upper surface of the inner rectrices bluish green, much as in *C. melanurus*, rather than a bronze-green; female decidedly darker gray.

Inhabits the Tropical Zone of the Pacific coast and eastward into the lower Cauca region, where it extends upward at least to the lower border of the Subtropical Zone. A male from La Frijolera (5000 ft.) on the lower Cauca has the tail externally, above, much bluer than in the type of *australis*.

Alto Bonito, 1; Bagado, 1; Barbacoas, 2; La Frijolera, 2.

ORDER **COCCYZES.**

FAMILY CUCULIDÆ. CUCKOOS, ANIS.

(1475) **Coccyzus melacoryphus** *Vieill.*

Coccyzus melacoryphus VIEILL., Nouv. Dict. d'Hist. Nat., VIII, 1817, p. 271 (Paraguay); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 134 (Bonda); HELLM., P. Z. S., 1911, p. 1202 (Sipi).

Inhabits the Tropical Zone. Our specimens agree with others from Asuncion.

Dabeiba, 3; Caldas, 2; Cali, 2; Miraflores, 1; Florencia, 1; La Morelia, 1.

(1476) **Coccyzus americanus americanus** (*Linn.*).

Cuculus americanus LINN., Syst. Nat., I, 1758, p. 111 (Carolina).

Coccyzus americanus SCL. & SALV., P. Z. S., 1879, p. 537 (Medellin); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 134 (Bonda).

Eight specimens from the Eastern Andes (March 10–May 13) average grayer above than April and May birds from eastern United States, a difference possibly due to less worn plumage.

La Olanda, Cundinamarca, 4, May 10–13; Puente Andalucia, Cundinamarca, 3, April 22, 23; Choachi, 2, Oct. 2; Villavicencio, 1, March 10.

(1482) **Piaya cayana columbiana** (*Cab.*).

Pyrrhococcyx columbianus CAB., J. f. O., 1862, p. 170 (Cartagena, Col.).

Piaya cayana WYATT, Ibis, 1871, p. 379 (Ocaña to Bucaramanga up to 7000 ft.).

Piaya cayana mehleri ALLEN, Bull. A. M. N. H., XIII, 1900, p. 134 (Bonda; Santa Marta; San Sebastian).

After comparison with an essentially topotypical series from Santa Marta, I refer to this form our specimens from the Magdalena Valley and western slope of the Eastern Andes as far south as Chicoral. These birds have the ventral region darker, the rectrices are blacker, and a bird from Puerto Berrio is deeper above than true *columbiana.* They thus show an approach toward *P. c. nigricrissa* of western Colombia, which, however, is darker above and has much more black on the ventral region.

Puerto Berrio, 1; Chicoral, 2; Alto de la Paz (w. slope, E. Andes), 1; Subia (w. slope, E. Andes), 2.

(1484) **Piaya cayana nigricrissa** (*Cab.*).

Pyrrhococcyx nigricrissa Cab., J. f. O., 1862, p. 169 (Babahoyo or Esmeraldas, w. Ecuador) ex Sclater P. Z. S., 1860, p. 285 (nomen nudum); Mus. Hein., IV, i, 1862, p. 85.

Piaya cayana Scl. & Salv., P. Z. S., 1879, p. 537 (Envigado).

Piaya cayana caucæ Stone, Proc. Acad. N. S. Phila., 1908, p. 499 (Rio Cauca, Col.); Cory, Field Mus. Pub., 183, 1915, p. 309 (Cauca Valley and possibly south to Ecuador).

Piaya cayana nigricrissa Cory, Field Mus. Pub., 183, 1915, p. 310 (part — w. Ecuador only).

Inhabits the Tropical and Subtropical Zones in western Ecuador and western Colombia, extending in Colombia eastward to the eastern slope of the Central Andes. Specimens from Antioquia east of the Western Andes approach *columbiana,* but on the whole, are nearer *nigricrissa.*

Much against my will I find myself compelled to adopt the name *nigricrissa* (Cab. *ex* Scl.) for this form rather than *caucæ* Stone.

Sclater first used this name in connection with three specimens collected by Fraser at Babahoyo, western Ecuador and, shortly after, applied it to a specimen or specimens secured by the same collector at Esmeraldas, western Ecuador (P. Z. S., 1862, p. 285 and p. 297). In neither case, however, did he publish a description and the name *nigricrissa* up to this point, is a *nomen nudum.*

In 1862, however, Cabanis, having before him "ein Fraser' sches original-exemplar von Equador," noted its close relation to the Costa Rican bird but said that, as its name indicated, the form was distinguished by its black crissum, a statement which, in view of the definiteness of the locality given, and the character of the form concerned may, I think, be accepted as a sufficiently adequate description of the race; and, on this assumption, I give western Ecuador as the type-locality. Should this view not be considered tenable the name could date from its publication later in the same year

(Cab. Mus. Hein., IV, i, p. 85). The description here given by Cabanis may apply to certain Antioquian specimens which, while not typical of *nigricrissa,* as stated above, are nearer to that form than to *columbiana.*

Thus while Cabanis describes the tibiæ of his Colombian specimen as "nigricantibus," a term applied also to other forms, its ventral region and crissum are described as "nigris," a statement which is applied, and will apply only to the form here under consideration. It is true that the measurement given by Cabanis for the tail of his specimen (ten inches) is shorter than that of the bird to which I apply his name. This, however, may be said of all three of the Colombian forms of *Piaya* and the measurement given is apparently, therefore, either an error or is taken from a specimen in which the tail was not fully developed. It is not, however, in my opinion necessary to resort to this second description of *nigricrissa,* Cabanis' treatment of the form in J. f. O. (*l. c.*) being sufficiently definite to admit of the application of the name, in accordance with Sclater's intention, to the west Ecuador form.

These facts, consequently, in connection with those presented under the following form, appear to warrant the use of the name *nigricrissa* of which, therefore, *caucæ* Stone becomes a synonym.

Alto Bonito, 1; San José, 1; Barbacoas, 2; Buenavista, 1; Ricaurte, 1; Puerto Valdivia, 2; San Antonio, 4; Cerro Munchique, 2; Guengüe, 1; Rio Frio, 1; Miraflores, 1; Salento, 2; Sta. Elena, 2; Andes w. of Honda (5000 ft.), 2.

(1485) **Piaya cayana mesura** (*Cab.*).

P[yrrhococcyx] mesurus Cab., Mus. Hein., IV, I, 1862, p. 83 (Bogotá).
Piaya cayana nigricrissa Auct. nec. Cab.

Two forms of *Piaya* inhabit the Bogotá region, *P. c. mesura* and *P. c. columbiana.* The first occurs on the eastern slopes of the Eastern Andes, and, singularly enough, on both eastern and western slopes of the Andes at the head of the Magdalena Valley; the second, occurs on the slopes of the Eastern Andes west of Bogotá and in the Magdalena Valley at least as far south as Chicoral.

Previous authors have considered Cabanis' name *mesura* as applicable to the western slope bird and have, consequently, synonymized it with *columbiana;* but although western slope specimens are not typical of *columbiana,* they are too near that race to make it probable that Cabanis, after describing *columbiana* (*l. c.* p. 82), would, on the next page, describe as new a bird which is not separable from it. Of more importance, however, is the fact that Cabanis' description of *mesura* will not apply to the western slope bird while it does apply to the bird from the eastern slope. The latter is distinguished chiefly by the comparative blackness of all but the central tail-feathers, seen from below, a character which at once separates it from the other Colombian forms. Moreover, compared with specimens from west of Bogotá (which in the color of the upperparts agree with true *columbiana*) *mesura* as, Cabanis states, has the upperparts "wenig lebhafter als bei *C.* (= *P.*) *colombianus*."

A specimen from La Palma, in the Central Andes at the head of the Magdalena Valley, has the tail longer than in Buena Vista and Quetame specimens, but, in color, I can detect no differences between two specimens from this locality, two from Andalucia (w. slope E. Andes, 3000 ft.) and others from the eastern slope of the Eastern Andes. In view of the fact that this species ranges upward to the Subtropical Zone, it is not improbable that this race has entered the upper Magdalena region over the Andalucia pass of the Eastern Andes, the altitude of which is only 7000 feet.

La Palma, 2; Andalucia (w. slope, 3000 ft.), 2; Quetame, 3; Buena Vista, 2; Barrigon, 2.

(1490) **Piaya rutila rutila** (*Ill.*).

Cuculus rutilus Ill., Abh. Berl. Ak. Wiss., 1812, p. 224 (Cayenne).

Two specimens from Villavicencio are somewhat darker and have the belly grayer than one from Cayenne but agree essentially with several from Trinidad.

Villavicencio, 2.

(1490*a*) **Piaya rutila gracilis** (*Heine*).

Coccyzusa gracilis Heine, J. f. O., 1863, p. 356 (Esmeraldas).
Piaya minuta Scl. & Salv., P. Z. S., 1879, p. 537 (Medellin).

Eight specimens from the Cauca Valley and two from the Magdalena Valley agree with a series from western Ecuador including six from Esmeraldas. This form may be distinguished from true *rutila* and from *P. r. panamensis* Todd[1] by its paler colors, particularly below, and by the greater restriction of the rufous breast-area.

Cali, 6; La Manuelita, 1; Rio Frio, 1; Malena, 2.

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[1] *Piaya rutila panamensis* Todd, Ann. Carnegie Mus., VIII, No. 2, 1912, p. 212.

(1492) **Neomorphus salvini** *Scl.*

Neomorphus salvini Scl., P. Z. S., 1866, p. 60, pl. v, (Veragua).

Appears to be restricted to the Tropical Zone of the Pacific coast. Our three specimens agree with others from Nicaragua.

Alto Bonito, 2; Baudo Mts., 1.

(1496) **Tapera nævia** (*Linn.*).

Cuculus nævius Linn., Syst. Nat., I, 1766, p. 170 (Cayenne).

Diplopteryx nævius Wyatt, Ibis, 1871, p. 379 (San Nicolas; Naranjo); Scl. & Salv., P. Z. S., 1879, p. 537 (Concordia; Medellin).

Inhabits open or arid places in the Tropical Zone.

Caldas, 1; La Frijolera, 1; San Antonio, 1; La Manuelita, 1; Turbaco, 1; near Tema, Cundinamarca, 3; Quetame, 2.

(1499) **Crotophaga ani** *Linn.*

Crotophaga ani Linn., Syst. Nat., I, 1758, p. 105 (Brazil); Wyatt, Ibis, 1871, p. 379 (Ocaña); Scl. & Salv., P. Z. S., 1879, p. 536 (Retiro; Medellin); Allen, Bull. A. M. N. H., XIII, 1900, p. 134 (Palomina).

An abundant bird throughout the arid Tropical Zone and in clearings or bush-grown places in the humid Tropical Zone, ranging upward along the trails or through forestless areas to the Temperate Zone. There is much variation in size, and in the size and shape of the bill among our thirty-eight specimens, apparently in part due to age, and also to altitude, the largest specimens being from the Temperate Zone.

Dabeiba, 2; Quibdó, 2; Noanamá, 1; Caldas, 2; Tumaco, 1; Barbacoas, 2; Ricaurte, 2; Cali, 1; Puerto Valdivia, 1; La Frijolera, 1; La Manuelita, 2; Miraflores, 1; Salento, 4; Sta. Elena, 1; Barro Blanco, 1; La Candela, 1; Chicoral, 1; La Playa, 1; Turbaco, 2; Pacho, 3; Esmeraldas, 2; Chipaque, 1; Buena Vista, 1; La Morelia, 2.

(1500) **Crotophaga major** *Gmel.*

Crotophaga major Gmel., Syst. Nat., I, 1788, p. 363 (Cayenne); Cass., Proc. Acad. N. S. Phila., 1860, p. 138 (R. Atrato); Wyatt, Ibis, 1871, p. 379 (Paturia); Scl. & Salv., P. Z. S., 1879, p. 536 (Neché).

Locally common in the forests of the Tropical Zone.

Dabeiba, 1; Atrato River, 2; Noanamá, 2; Algodonal, 1; Purteo Berrio, 1; Malena, 2; Honda, 1.

ORDER SCANSORES.

FAMILY CAPITONIDÆ. BARBETS.

(1503) **Capito aurovirens** (*Cuv.*).

Bucco aurovirens CUV., Regne Anim., I, 1829, p. 458 (Peru).

Three males and three females from La Morelia agree with Ecuador examples and add this species to the known fauna of Colombia.

La Morelia, 6.

(1504*a*) **Capito maculicoronatus rubrilateralis** *Chapm.*

Capito maculicoronatus rubrilateralis CHAPM., Bull. A. M. N. H., XXXI, 1912, p. 144 (Juntas de Tamaná, Col.).

Capito maculicoronatus SCL. & SALV., P. Z. S., 1879, p. 537 (Remedios; Neché); HELLM., P. Z. S., 1911, p. 1198 (Nóvita, R. Cajon, Noanamá).

Char. subsp.— Similar to *C. m. maculicoronatus* Lawr., but larger, bill stouter, side-patch mainly vermilion rather than mainly orange; crown averaging whiter; male with pectoral band wider; flanks, in male, more heavily marked with black.

Inhabits the Tropical Zone of the Pacific coast at least as far south as Buenaventura and, at the north, extends eastward through this zone east of the Atrato to Magdalena drainage at Remedios. Specimens from Puerto Valdivia have less black on the sides and flanks than in typical *rubrilateralis*, and are therefore more like *pirrensis* in color, but in general size they agree with *rubrilateralis*.

Two females from Rio Salaqui have the side-patch mainly vermilion rather than mainly orange and thus resemble *rubrilateralis* in color, but in measurements they agree with *maculicoronatus* and are thus intermediate between the two. They should be referred to *pirrensis* Nels.

Alto Bonito, 5; Andagueda, 2; Baudo, 1; Juntas de Tamaná, 2; Nóvita, 1; San José, 7; Los Cisneros, 2; Puerto Valdivia, 11.

(1504*b*) **Capito maculicoronatus pirrensis** *Nels.*

Capito maculicoronatus pirrensis NELS., Smith. Miscell. Coll., **60**, No. 21, 1913, p. 1 (Cana, 1800 ft., e. Panama).

The fact that two females of this species from Salaqui, are to be referred to this form rather than to the one which occurs at the head of the Atrato, further emphasizes the faunal affinities of the western lower Atrato Valley with eastern Panama.

Except for a smaller amount of black on the sides in the male, *pirrensis* agrees in color with *rubrilateralis* but in size it is nearer *maculicoronatus*. In the shape of its bill, however, examination of Nelson's series of seven specimens in connection with those in our own collection from Salaqui, shows that, in the adult, it possesses characters of its own. In *rubrilateralis* and *maculicoronatus* the bill has the same general relative proportions, it being simply longer and deeper in the former; but the bill of *pirrensis* differs from both that of the other two forms in having the outline of the culmen less evenly rounded, more angular, with the apex slightly in advance of the nostril, while its base is more compressed laterally and more elevated into a well-defined ridge, which leaves on each side a distinct shelf at the anterior edge of which the nostril opens.

The differences in question are difficult to express by measurements but are pronounced in the specimens themselves.

Average Measurements of Females.

		Wing	Tail	Ex. Cul.	Depth of Bill at Nostril
4	*C. m. maculicoronatus* (Canal Zone)	76.5	46.5	21	9.5
2	" " *pirrensis* (Cana)	77.5	47	21.5	10
2	" " " (Salaqui)	75	45	22	9.5
5	" " *rubrilateralis* (San José)	82	49	22	10
5	" " " (Puerto Valdivia)	81.7	48	21.5	10.7

(1505) **Capito squamatus** *Salv.*

Capito squamatus Salv., Ibis, 1876, p. 494, pl. xiv (Santa Rita, Ecuador).

Richardson secured a single male of this species at Ricaurte. It differs from five Ecuador (Esmeraldas and Chone) specimens in having the forehead scarlet or scarlet-red rather than orange-chrome, while the sides of the crown are more broadly black, the whitish central area being, therefore, more restricted. Should these differences prove constant the Ricaurte form would constitute a well-marked race. In any event, the occurrence of *squamatus* in southwestern Colombia, emphasizes the close faunal relationships of this region with northwestern Ecuador rather than with western Colombia.

Ricaurte, 1.

(1506) **Capito hypoleucus** *Salv.*

Capito hypoleucus Salv., Bull. B. O. C., VII, 1897, p. xvi (Valdivia, Antioquia, 3800 ft.).

This species, heretofore recorded only from the type-locality, is one of the most distinct forms of the humid Cauca-Magdalena Fauna. There appears to be no sexual difference in color.

Puerto Valdivia, 1; La Frijolera, 4; Central Andes w. of Honda (5000 ft.), 3; El Carmen de Jacopi, w. slope Eastern Andes (Bogotá region), 1.

(1507) **Capito quinticolor** *Elliot.*

Capito quinticolor Elliot, Nouv. Arch. Mus. Paris, I, 1865, p. 76, pl. iv, fig. 1 (New Grenada); Dalmas, Bull. Soc. Zool. France, XXV, 1900, p. 176 (El Paillon, near Buenaventura); Hellmayr, P. Z. S., 1911, p. 1198 (Tadó, 230 ft.).

A fine adult male, collected by Richardson at Barbacoas is apparently the fifth known specimen of this rare species, the range of which is evidently restricted to the Tropical Zone of the Pacific coast.

Barbacoas, 1.

(1510) **Capito auratus auratus** (*Dumont*).

Bucco auratus Dumont, Dict. Sci. Nat., IV, 1816, p. 54 (Peru).

Common in the forests of the Tropical Zone at the eastern base of the Eastern Andes. I have seen no Peruvian specimens but Hellmayr (Nov. Zool., XIV, 1907, p. 82) states that while "specimens from Eastern Ecuador have, as a rule, the forehead and crown paler and less brownish....those from Bogotá are exactly like the Peruvian ones."

Capito auratus intermedius Berl. & Hart., to which I refer four males and two females from the Cunucunuma River near Mt. Duida, may be readily distinguished by its orange-margined rump, unspotted throat of the female and comparative absence of spots below and brighter forehead in the male. I am, however, unable to distinguish two topotypical males of "*C. aurantiicinctus*" Dalmas from the Caura River, Venezuela, from the four males from Duida. All, except one from the Caura, show an orange tinge on the abdomen and all have the rump margined with orange. If, therefore, the Duida specimens truly represent *intermedius,* I am unable to appreciate the characters of *aurantiicinctus* so far as the specimens at hand are concerned.

La Morelia, 1; Florencia, 1; Villavicencio, 1; Buena Vista, 9.

(1514) **Eubucco richardsoni granadensis** (*Shelley*).

Capito granadensis Shelley, Cat. Bds. B. M., XIX, 1891, p. 115, pl. v, fig. 5 (Bogotá).

Found by us only at Buena Vista on the eastern slope of the Eastern Andes, where it doubtless occurs as a representative of the Subtropical Zone. The bluish gray nuchal band of the male appears to be narrower than in *E. r. richardsoni.*

Buena Vista, 4.

(1519) **Eubucco bourcieri bourcieri** (*Lafr.*).

Micropogon bourcierii Lafr., Rev. Zool., 1845, p. 179 (Bogotá).

This form appears to be restricted to the Subtropical Zone of the mountains arising from the Magdalena Valley. Our four specimens (all males) are from the head of the valley.

La Candela, 1; La Palma, 1; near San Agustin, 1; Andalucia (w. slope, 5000 ft.), 1.

(1519*a*) **Eubucco bourcieri occidentalis** *Chapm.*

Eubucco bourcieri occidentalis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 608 (San Antonio, Col.).

Capito bourcieri Scl. & Salv., P. Z. S., 1879, p. 538 (Frontino).

Capito salvini Dalmas, Bull. Soc. Zool. France, 1900, p. 180 (Las Cruces = San Antonio, Col.).

Capito bourcieri salvini Hellm., P. Z. S., 1911, p. 1199 (Loma Hermosa, 4150 ft.; Pueblo Rico, 5200 ft.).

Char. subsp.— Similar to *E. b. salvini* but more richly colored and averaging larger; red of throat slightly deeper and more clearly defined or more sharply contrasted with the tawny orange of the breast, this last-named color deeper and of greater extent both laterally and posteriorly; flanks and abdomen appreciably yellower.

Inhabits the Subtropical Zone of the Western Andes where it represents *E. b. salvini* of the Subtropical Zone of Western Panama and Costa Rica.

La Frijolera, 6; San Antonio, 9.

(1522) **Semnornis ramphastinus** (*Jard.*).

Tetragonus ramphastinus Jard., New Edinburgh Phil. Journ., 1855, p. 404 ("Eastern Cordillera between Quito and the Mountain Cayambe").

Semnornis ramphastinus Hellm., P. Z. S., 1911, p. 1200 (La Tigra, 5700 ft.).

Richardson secured a male of this species at San Antonio. It differs from ten Ecuadorian examples, in having the red pectoral band twice as broad, and less clearly defined from the red of the abdominal region.

San Antonio, 1.

FAMILY RAMPHASTIDÆ. TOUCANS.

(1524) **Ramphastos piscivorus brevicarinatus** *Gould.*

Ramphastos brevicarinatus GOULD, Mon. Ramphast., 2d ed., 1854, pl. 3 (western side of the Isthmus of Panama); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 133 (Bonda; Cacagualito).

A single specimen from the Rio Salaqui.

(1525) **Ramphastos swainsoni** *Gould.* (Plate XXXVIII.)

Ramphastos swainsonii GOULD, P. Z. S., 1833, p. 69 (Mts. of Colombia); HELLMAYR, P. Z. S., 1911, p. 1200 (Noanamá).

Ramphastos tocardus CASS., Proc. Acad. N. S. Phila., 1860, p. 136 (Rio Nercua).

Ramphastos tocard SCL. & SALV., P. Z. S., 1879, p. 537 (Concordia; Medellin; Remedios).

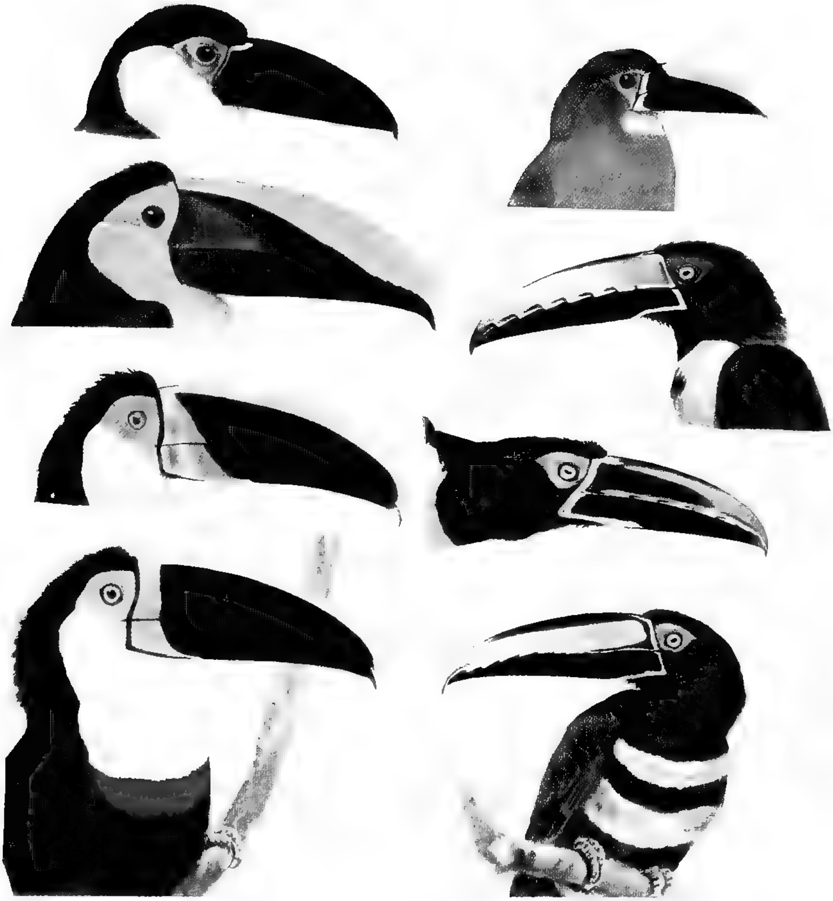
This is a species of the Tropical Zone of the Pacific and eastward through Antioquia to the Magdalena. It also ranges up the Western and Central Andes to the Subtropical Zone. In the Pacific coast region this bird occurs with *Ramphastos ambiguus abbreviatus* (Cab.). Aside from their larger size, our nineteen specimens of *swainsoni* have (in the dried skin) the basal and lateral areas of the bill with more or less red or buffy olive tinged with red, or with usually some indication of red at the posterior margin; whereas, eleven specimens of *abbreviatus* have the same part of the bill black without a trace of red.

R. Salaqui, 2; Alto Bonito, 1; Baudo, 1; Bagado, 3; Juntas de Tamaná, 1; Salencio, 1; San José, 1; Puerto Valdivia, 1; Las Lomitas, 1; San Antonio, 4; Cocal, 1; Miraflores, 2.

(1526) **Ramphastos ambiguus ambiguus** *Swains.*

Ramphastos ambiguus SWAINS., Zool. Ills., III, 1823, pl. 168 (no locality; I suggest Buena Vista, above Villavicencio, Colombia).

Based on a colored drawing of a specimen from an unknown locality, by an unknown artist, this species was subsequently recognized as coming from the Bogotá region by Gould (Monog. Ramphast., 2d. ed., pl. v), and I therefore suggest Buena Vista, whence have come many 'Bogotá' skins, as an appropriate type-locality. The species occurs, however, not only on the



BILLS OF TOUCANS
(Drawn from fresh specimens by L. A. Fuertes)

Andigena nigrirostris occidentalis (Chapm.)
Ramphastos swainsoni (Gould)
Ramphastos citreolaemus (Gould)
Ramphastos culminatus (Gould)

Aulacorhynchus albivitta albivitta (Boiss.)
Pteroglossus torquatus nuchalis (Cab.)
Pteroglossus castanotis castanotis (Gould)
Pteroglossus pluricinctus (Gould)

eastern slope of the Eastern Andes, but also in the Subtropical Zone on the western slope of this range, and on the eastern slope of the Central Andes. Singularly enough its western representative, *R. a. abbreviatus,* appears to be restricted to the Tropical Zone.

Near San Agustin, 1; La Palma, 3; La Candela, 1; Andalucia, (5000 ft.), 1; Fusugasugá, 1; Buena Vista, 4.

(1526*a*) **Ramphastos ambiguus abbreviatus** *Cab.*

R[*amphastos*] *abbreviatus* CAB., J. f. O., 1862, p. 334 ("Kustengegend von New Granada, von Porto Cabello").

Nine specimens from the Tropical Zone of the Pacific coast of Colombia are smaller with shorter, more vertically compressed bills (in which the 'keel' of the culmen shows to its base) than specimens from the Bogotá region to which, as I have shown above, the name *ambiguus* is applicable. This small form ranges from Panama southward through the Tropical Zone of western Colombia and western Ecuador, and doubtless extends eastward through northern Antioquia at least to the Magdalena Valley, though a specimen from Puerto Valdivia on the lower Cauca approaches *ambiguus* particularly in the size of the bill (see beyond).

I have seen no specimens from Puerto Cabello, Venezuela whence Cabanis[1] states his type of *abbreviatus* came, but his description of this bird seems to indicate that it is a specimen of the small Tropical Zone form of *ambiguus,* and I, therefore, provisionally accept his name.

Iguamiando, Chocó, 1; Nóvita, 4; San José, 1; Barbacoas, 3.

Measurements.

Name	Locality	Sex	Wing	Tail	Tarsus	Bill	
						Length	Width at base
R. a. abbreviatus	Chocó	♂	200	149	45.5	142.5	34.5
“ “ “	Nóvita	♂	195	138.5	47	145.5	35
“ “ “	Barbacoas	♂	203	145	45	120.5	35
R. a. ambiguus	Buena Vista	♂	230	164.5	51	162	40
“ “ “	“ “	♂	228	164.5	50.5	154	42
“ “ “	“ “	♂	240	163.5	53	159	40
R. a. abbreviatus	Nóvita	♀	190	133	43.5	116.5	33
“ “ “	San José	♀	203	146	48	124.5	34.5
“ “ “	Barbacoas	♀	210	145	48	121.5	34
“ “ “	Puerto Valdivia	♀	215	141	51	149	38
R. a. ambiguus	San Agustin	♀	221	156.5	51.5	147	40
“ “ “	“ “	♀	231	160	53.5	148	41
“ “ “	“ “	♀	221	156.5	51.5	147	40

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[1] Cabanis (*l. c.*) placed Puerto Cabello in New Granada, but for some thirty years that name had not included what is now Venezuela.

(1529) **Ramphastos cuvieri** *Wagl.*

Ramphastos cuvieri Wagl., Syst. Av. Rhamphast. 1827, p. 5 ("Brasilia versus flumen Amazonum").

In six males the bill measures from 175 to 198 mm. On the ground of their larger size, therefore, I refer our specimens to *cuvieri*, of which, however, I have no authentic specimens. Unfortunately the collector made no notes on the color of the bill in the fresh specimen, but in three of these five birds there is an indication of red about half an inch from the base of the maxilla near the yellow culmen streak, suggesting therefore an approach toward *R. inca.* The occurrence of this species at Barrigon brings it into the same region in which we secured *R. culminatus.*

La Morelia, 3; Florencia, 2; Barrigon, 3.

(1530) **Ramphastos culminatus** *Gould.* (Plate XXXVIII.)

Ramphastos culminatus Gould, P. Z. S., 1833, p. 70 ("Mexico"; Brabourne and Chubb "designate Colombia"; I suggest adding Villavicencio).

Four specimens from the eastern base of the Eastern Andes are evidently to be referred to this species. Three of them have the "snow-white" breast and therefore agree with Gould's description, and one has a faint tinge of yellow on the breast and therefore resembles his plate (Monog. Ramphast., 2d. ed.). A colored drawing of the bill made by Fuertes from a specimen in the flesh agrees minutely with the figures in Gould's plate (*l. c.*).

Buena Vista, 2; Villavicencio, 2.

(1531) **Ramphastos citreolæmus** *Gould.* (Plate XXXVIII.)

Ramphastos citreolæmus Gould, P. Z. S., 1843, p. 147 (Bogotá); Wyatt, Ibis, 1879, p. 379 (San Nicolas); Scl. & Salv., P. Z. S., 1879, p. 537 (Medellin, Remedios); Robinson, Flying Trip, p. 157 (R. Magdalena).

This species appears to be restricted to the humid Tropical Zone of the Magdalena and lower Cauca Valleys.

Puerto Valdivia, 4; La Frijolera, 1; Puerto Berrio, 1; Malena, 1; w. of Honda (alt. 2000 ft.), 3.

(1537) **Andigena hypoglaucus** (*Gould*).

Pteroglossus hypoglaucus Gould, P. Z. S. 1833, p. 70 (No locality; Brabourne and Chubb give "Colombia").

Found by us only in the Temperate Zone of the Central Andes.

Almaguer, 1; Laguneta, 2; Santa Isabel, 4.

(1540) **Andigena nigrirostris nigrirostris** (*Waterh.*).

Pteroglossus nigrirostris WATERH., P. Z. S., 1839, p. 111 (No locality; Brabourne and Chubb give "Colombia"; I suggest adding Subia, near La Mesa).

Andigena nigrirostris WYATT, Ibis, 1871, p. 379 (Portrerras).

This bird appears to be restricted to the Subtropical Zone of the Eastern Andes. Our four specimens were all collected by Gonzales at Subia, west of Bogotá. In addition to the lack of red in the bill, this form apparently has the black of the nape extending somewhat further on to the back, and the chestnut of the thighs slightly deeper than in *spilorhynchus*. Since, however, the last-named race is intermediate between *nigrirostris* and *occidentalis*, it seems not improbable that *nigrirostris* may intergrade with *spilorhynchus*. One of our specimens shows a faint indication of red at the base of the maxilla both near the nostril and at the side.

Subia, 4.

(1541) **Andigena nigrirostris spilorhynchus** *Gould.*

Andigena spilorhynchus GOULD, P. Z. S., 1858, p. 149 "(Forest of Baeza on the eastern side of the Cordillera, Ecuador"); SCL. & SALV. P. Z. S., 1879, p. 537 ("Remedios," possibly came from above Salmon's station).

Three specimens from the Central Andes while, in a measure intermediate, are evidently to be referred to this form rather than to the one from the Western Andes, for which I have proposed the name *occidentalis*. While all three have more red on the upper mandible than in a specimen from Ecuador, two have only the faintest indication of red at the base of the lower mandible, while in a third this mark is but slightly more evident.

True *spilorhynchus*, so far as I can learn, has no red on the lower mandible while the red on the maxilla is comparatively restricted. An Ecuador specimen in our collection is so colored, and in his description of the race Gould (*l. c.*) states that it differs from *nigrirostris* in the bill being shorter and broader and much more robust, and colored with obscure brownish red at the base of the upper mandible. The differences in size and form do not hold, but the absence of red on the lower mandible is apparently a distinctive character of *spilorhynchus*. Sclater (P. Z. S., 1858, p. 75) writes that "Napo, specimens have an obsolete orange band at the base of the upper mandible which extends rather more forward in front of the nostrils."

(1541*a*) **Andigena nigrirostris occidentalis** *Chapm.* (Plate XXXVIII.)

Andigena nigrirostris occidentalis Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 385, (San Antonio, W. Andes, Col.).

Andigena spilorhynchus Scl. & Salv., P. Z. S., 1879, p. 537 (Frontino, Concordia).

Char. subsp.— Similar to *A. n. spilorhynchus* (Gould) but with the red area at the base of the bill larger on the maxilla and crossing the base of the mandible.

This form is apparently restricted to the Subtropical Zone of the Western Andes.

San Antonio, 6; Cerro Munchique, 1; La Florida, 1.

In the Western Andes, *A. n. occidentalis* was found only in the Subtropical Zone, where it is not uncommon, but of our three specimens of *spilorhynchus* two are from the Temperate Zone and one from the junction of this zone with the Subtropical Zone.

Laguneta, 2; Salento (9000 ft.), 1.

(1546) **Pteroglossus pluricinctus** *Gould.* (Plate XXXVIII.)

Pteroglossus pluricinctus Gould, P. Z. S., 1835, p. 157 ("Brasilia").

Inhabits the Tropical Zone at the eastern base of the Eastern Andes. A female from Villavicencio agrees with Gould's plate (Monog. Ramph., 1854, pl. 17), but two specimens from La Morelia have more red in the abdominal belt.

La Morelia, 2; Villavicencio, 1.

(1547) **Pteroglossus castanotis castanotis** *Gould.* (Plate XXXVIII.)

Pteroglossus castanotis Gould, P. Z. S., 1833, p. 119 ("Brasilia").

A single specimen from Villavicencio, appears to be not fully mature and has only a faint trace of chestnut on the nape.

Villavicencio, 1.

(1550) **Pteroglossus torquatus nuchalis** *Cab.* (Plate XXXVIII.)

Pteroglossus nuchalis Cab., J. f. O., 1862, p. 332 (Porto Cabello "Neu-Granada" = Venezuela).

Pteroglossus torquatus Scl. & Salv., P. Z. S., 1879, p. 537 (Remedios); Robinson, Flying Trip, p. 157 (Yeguas); Allen, Bull. A. M. N. H., XIII, 1900, p. 133 (Bonda).

Inhabits the Tropical Zone of the lower Cauca and Magdalena Valleys and northward. Comparison of seventeen Colombian, with twenty-five

Central American specimens reveals no constant color differences. In the former the white border at the base of the bill is usually wider, and the bill averages longer, but these characters are not always diagnostic and the South American form is, in my opinion, barely worthy of recognition.

Puerto Valdivia, 6; Puerto Berrio, 2; Malena, 3; west of Honda, 3.

(1552) **Pteroglossus sanguineus** *Gould.*

Pteroglossus sanguineus Gould, Mon Ramph., 2nd ed. 1854, pl. 21, upper figure (no locality; I suggest San José, w. Col.).

Pteroglossus erythropygius Cass., Proc. Acad. N. S. Phila., 1860, p. 136 (R. Truando).

Pteroglossus erythropygius sanguineus Hellm., P. Z. S., 1911, p. 1201 (Noanamá).

A common species in the Tropical Zone of the Pacific coast. Our specimens show no indication of intergradation with *P. erythropygius,* of which I have seven specimens from western Ecuador, including two from Esmeraldas.

Salaqui, 1; Alto Bonito, 6; Bagado, 1; Baudo, 2; Nóvita, 1; Noanamá, 1; San José, 2; Los Cisneros, 2; Barbacoas, 5; Buenavista, Nariño, 1.

(1556) **Pteroglossus flavirostris flavirostris** *Fraser.*

Pteroglossus flavirostris Fraser, P. Z. S., 1840, p. 61 ("Rio Janeiro"; Berlepsch and Hartert substitute Rio Solimoës, Brazil.)

Inhabits the Tropical Zone at the eastern base of the Andes in Amazonian Colombia. A specimen from Mt. Duida agrees with four from La Morelia and Florencia and also one from La Union on the Caura, Venezuela.

La Morelia, 3; Florencia, 2.

(1559) **Pteroglossus humboldti** *Wagl.*

Pteroglossus humboldti Wagl., Syst. Av. Pter., 1827, sp. 4 ("Brasilia").

Two males from La Morelia agree in color with one from Pebas, Peru, but are somewhat smaller (wing, 115 and 121 mm. as compared with 127 mm.).

La Morelia, 2.

(1567) **Selinidera reinwardti** (*Wagl.*).

Pteroglossus reinwardti Wagl., Syst. Av. Pter., 1827, sp. 11 ("Brasilia").

Found by us only in the Tropical Zone at the eastern base of the Eastern Andes in Amazonian Colombia.

La Morelia, 3; Florencia, 1.

(1567*a*) **Selinidera spectabilis** *Cass.*

Selinidera spectabilis Cass., Proc. Ac. N. S. Phila., 1857, p. 214 (Cocuyos de Veragua, Panama); *Ibid.*, 1860, p. 136 (Rio Truando).

Found by us only near the headwaters of the Atrato and slopes above the lower Cauca, whence five specimens agree with a series from Nicaragua. These specimens, with those given by Salvin and Godman from the Rio Truando, constitute the existing Colombian records for this species, the only member of its genus known from west of the Andes.

Baudo (2500–3500 ft.) 1; La Frijolera, 1.

(1576) **Aulacorhynchus albivitta albivitta** (*Boiss.*) Plate XXXVIII.

Pteroglossus albivitta Boiss., Rev. Zool., 1840, p. 70 (Bogotá).
Aulacorhamphus albivitta Wyatt, Ibis, 1871, p. 380 (Alto; Portrerras).

Inhabits the Subtropical Zone of the Eastern Andes and eastern slope of the Central Andes. In addition to its white throat this form may be distinguished from *phæolæmus* and *griseigularis* by the reddish tinge, which even in dried skins, shows at the tip of the mandible, and on the end of the blackish area on the maxilla; this area is also narrower, particularly terminally, than in the other two forms mentioned.

One of three specimens from La Palma approaches *griseigularis* in the color of the throat, while an El Eden specimen has the throat of *albivitta* but the bill of *griseigularis*.

El Eden, 1; La Palma, 3; Andalucia, 2; Aguadita, 6; Subia, 8; Palo Hueco, 1.

(1576*a*) **Aulacorhynchus albivitta phæolæmus** *Gould.*

Aulacorhamphus phœolœmus Gould, Ann. Mag. Nat. Hist., XIV, 1874, p. 184 (Concordia, W. Andes, Col.).

Aulacorhamphus albivitta (nec Boiss.) Scl. & Salv., P. Z. S., 1879, p. 537 (Concordia only).

Aulacorhamphus petax Bangs, Proc. Biol. Soc. Wash., 1908, p. 158 (San Antonio, Col.).

Inhabits the Subtropical Zone of the Western Andes, except at the northern end.

Hellmayr (P. Z. S. 1911, p. 1213) has shown that Gould's *phæolæmus* is based on the Concordia, Antioquia bird and not on the one occurring at Merida, Venezuela, which Gould erroneously referred to *phæolæmus*. The latter form is described by Gould as having the "throat deep grayish blue," whereas, the Merida bird, Hellmayr states, has the throat white and is referable to *albivitta*.

An error has evidently been made, therefore, in the Catalogue of the British Museum (Vol. XIX, p. 158) in designating as the type of *phæolæmus* a specimen in the Gould collection from Venezuela, rather than one from Concordia. The case is further complicated by the fact that the form of this bird inhabiting the western slope of the Central Andes and northern end of the Western Andes can be referred to neither *albivitta* nor *phæolæmus*, and I have therefore described it under the name *Aulacorhamphus albivitta griseigularis*.

San Antonio, 4; Cerro Munchique, 1; Florida, 1; Cocal, 1.

(1576*b*) **Aulacorhynchus albivitta griseigularis** *Chapm.*

Aulacorhynchus albivitta griseigularis Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 639. (Sta. Elena, Cen. Andes, Col.).

Char. subsp.— Similar to *A. a. phæolæmus* (Gould) but the throat gray with a faint bluish tinge instead of deep grayish blue; distinguished from *A. a. albivitta* by the color of its throat, by the greater width, apically, of the blackish stripe on the maxilla, and (in skins) by the absence of reddish at the end of this stripe and tip of the mandible.

Inhabits the Subtropical Zone of the western slope of the Central Andes and northern end of the Western Andes.

Paramillo, 1; Sta. Elena, 4; Salento, 3; Miraflores, 3.

(1577) **Aulacorhynchus hæmatopygius** (*Gould*).

Pteroglossus hæmatopygus Gould, P. Z. S., 1834, p. 147 (locality unknown).

Aulacorhamphus hæmatopygius Scl. & Salv., P. Z. S., 1879, p. 537 (Concordia; Remedios).

Inhabits the Subtropical Zone of all the three ranges of the Andes. I can discover no racial differences in our series of twenty-three specimens.

La Frijolera, 4; Salencio, 1; San Antonio, 10; Gallera, 3; Ricaurte, 2; Buenavista, Nariño, 1; Miraflores, 1; Salento, 1; Andalucia, 3; west of Honda (5000 ft.), 3; near Fusugasugá, 1; Buena Vista, 3.

ORDER **PICIFORMES.**

FAMILY GALBULIDÆ. JACAMARS.

(1586) **Galbula ruficauda ruficauda** *Cuv.*

Galbula ruficauda CUV., Regn. An., I, 1817, p. 420 (Guiana); CASS., Proc. Acad. N. S. Phila., 1860, p. 134 (R. Nercua); SCL. & SALV., P. Z. S., 1879, p. 535 (Frontino); ROBINSON, Flying Trip, p. 157 (R. Magdalena); STONE, Proc. Acad. N. S. Phila., 1899, p. 305 (Honda; Ambalema).

Found by us only in the Tropical Zone of the humid portion of the Lower Cauca and Magdalena Valleys, where it replaces *G. r. pallens* of the lower, more arid parts of the same valley. Thirteen males and ten females seem wholly to agree in color with ten males and five females, from northeast Venezuela, Trinidad and Tobago. As a Tropical Zone species the birds of the Honda region are shut off on the east by the Eastern Andes, while at the north their range appears to be bounded by that of *G. r. pallens* with which our series apparently shows they intergrade. Should an arm of the humid zone pass through the Valle Dupar to the Maracaibo region we enter the range of *G. r. brevirostris*, which, according to Cory's measurements, has a shorter bill than any bird in our series. Additional specimens from Venezuela and from northeastern Colombia are needed to solve this interesting problem in distribution.

Puerto Valdivia, 3; Puerto Berrio, 2; Honda, 5; 20 miles west of Honda, 13; Chicoral, 2.

(1587) **Galbula ruficauda pallens** *Bangs.*

Galbula ruficauda pallens BANGS, Proc. Biol. Soc. Wash., XII, 1898, p. 133 (Santa Marta, Col.).

Galbula ruficauda pallida ALLEN, Bull. A. M. N. H., XIII, 1900, p. 135 (Cienaga; Bonda).

Three males and two females from Calamar, on the lower Magdalena, agree in color with eleven topotypical specimens of this well-marked form but have the bill slightly shorter. Two males from Banco, where the arid coastal zone merges into the humid zone of the lower central Magdalena Valley, are intermediate in color, between *pallens* and *ruficauda*, and indicate their intergradation. From *ruficauda*, *pallens* may be distinguished by its paler rufous areas particularly in the female (the sexual difference being more marked in *pallens* than in *ruficauda*), narrower pectoral band and consequently large whitish throat area, which is buffy in the female and more or less washed with buffy in the male, and by its longer bill.

Calamar, 5; Banco, 2.

(1588) **Galbula melanogenia** *Scl.*

Galbula melanogenia Scl., Contr. Orn., 1852, p. 61, pl. 90 (Vera Paz, Guatemala?); Hellm., P. Z. S., 1911, p. 1194 (Rio Cajon; El Tigre; Juntas).

Inhabits the Tropical Zone of the Pacific coast. Eighteen specimens from this region agree with a series from Ecuador and are somewhat smaller and with the rufous areas darker than in twenty-one specimens from Mexico, Nicaragua and Chiriqui. Accepting Vera Paz, Guatemala, whence Sclater believed his type came (*cf.* Mon. Jacanas and Puff-Birds, p. 19) as the type-locality for *melanogenia*, it might be considered advisable to separate the Colombian and Ecuadorian form; but, in my opinion, the differences between even the extremes of the series are too slight to warrant this course.

Alto Bonito, 2; Quibdó, 2; Juntas de Tamaná, 3; Nóvita, 2; San José, 2; Los Cisneros, 1; Barbacoas, 6.

(1589) **Galbula tombacea tombacea** *Spix.*

Galbula tombacea Spix, Av. Bras., 1, 1824, p. 55, pl. lviii ("In sylvis flum. Amazonum").

Inhabits the Tropical Zone at the eastern base of the eastern Andes. Twelve specimens from Villavicencio and Buena Vista (whence doubtless come Bogotá specimens) have the chin somewhat whiter, the abdomen slightly paler than three specimens from La Morelia. I have no topotypical specimens. The female has the abdomen conspicuously paler than in the male.

La Morelia, 3; Buena Vista, 2; Villavicencio, 10.

(1593) **Galbula albirostris chalcocephala** *Dev.*

Galbula chalcocephala Dev., Rev. et Mag. de Zool., 1849, p. 55 (Sarayacu, Ecuador).

Five specimens from La Morelia agree with three from eastern Ecuador and are readily distinguished from twelve from Guiana (true *albirostris*) by their darker underparts, blacker chin, more purple-bronze crown and wholly black (or nearly so) maxilla.

La Morelia, 5.

(1598) **Brachygalba fulviventris fulviventris** *Scl.*

Brachygalba fulviventris Scl., Cat. Bds. B. M., XIX, 1891, p. 172 (Bogotá).

Found only in the Tropical Zone at the eastern base of the Eastern Andes, and apparently north of the Amazonian region in which it is replaced by *B. f. caquetæ,* described below.

Buena Vista, 3; Villavicencio, 5.

(1598*a*) **Brachygalba fulviventris caquetæ** subsp. nov.

Char. subsp.— Most closely resembling *Brachygalba fulviventris fulviventris* Scl., the belly varying from white washed with ochraceous-buff to uniform ochraceous-tawny, but differing from *fulviventris* in having the crown tipped with pale ochraceous-buff to ochraceous-tawny, the nuchal region and foreback more rufescent, the lower back, rump and upper tail-coverts blacker, in some specimens shining greenish black sharply defined from the brownish anterior parts; the inner wing-quills blacker and with little or no brownish; the anterior underparts averaging more rufescent.

Type.— No. 116080, Am. Mus. Nat. Hist., ♂, La Morelia (alt. 600 ft.) Rio Bodoquera, Caquetá, Colombia, July 16, 1912; L. E. Miller.

Inhabits the Tropical Zone at the eastern base of the Eastern Andes from Amazonian Colombia southward at least to Ecuador; eastern limits unknown.

Our series of twenty specimens of *Brachygalba fulviventris* from the Tropical Zone, at the eastern base of the Eastern Andes, clearly represents two forms of which eight specimens from Villavicencio and Buena Vista belong to one, and twelve from La Morelia and Florencia to the other. Sclater based his *Brachygalba fulviventris* (Cat. Bds. B. M., XIX, 1891, p. 172) on a 'Bogotá' specimen and, since Buena Vista and Villavicencio are in the heart of the eastern Bogotá region, while few if any 'Bogotá' skins appear to have come from the vicinity of La Morelia and Florencia, where, indeed Miller secured numbers of species, not before recorded from Colombia, there is reason to believe that Sclater's name is properly applicable to the Buena Vista and Villavicencio form. Furthermore, the figure of Sclater's type (Mon. Jacamars and Puff-Birds, pl. xi, left hand figure) agrees with this form rather than with that from the Caquetá region. I have therefore described the latter as new. Its characters, as the preceding diagnosis indicates, are pronounced, but it is not improbable that the differences shown by my series may be in part seasonal, since the Caquetá birds, taken in July, appear to be in fresher plumage than those from Buena Vista and Villavicencio, which were taken in March and April.

Galbula (*Brachygalba*) *inornata* Scl. (Jard. Cont. Orn., 1852, p. 32) from an unknown locality, is described as having the "middle of the belly pure white," and this fact in connection with Sclater's subsequent reference of his type to *Brachygalba lugubris* Sw. (Cat. Bds. B. M., XIX, p. 172) indicates that we are not here concerned with that form. Nevertheless, Taczanowski (Orn. Perou, III, p. 120) refers a specimen from Pebas, Peru to "*inornata*" and Sclater (*l. c.*) lists a specimen from the same locality under *lugubris*, while '*fulviventris*' he records from Sarayacu and Rio Napo, Ecuador.

Specimens in our collection from the Rio Napo are referable to the form here described as *caquetæ*, which name can doubtless also be applied to the Sarayacu examples, but the Pebas birds seem to require redetermination.

La Morelia, 10; Florencia, 2.

(1604) **Galbalcyrhynchus leucotis** *Des Murs.*

Galbalcyrhynchus leucotis Des Murs, Rev. Zool., 1845, p. 207 (Bogotá).

Found by us only at La Morelia where Miller secured six specimens. The occurrence of this Amazonian species in Bogotá collections as early as 1845 shows the wide area covered by native collectors at that early date. Two of our specimens sexed as "♀" have the ear-coverts white, indicating that in this species the sexes are alike. Possibly, supposed "females" without the white auriculars, are in reality specimens of *G. purusianus* Goeldi[1] in which the auriculars are brown in both sexes.

La Morelia, 6.

FAMILY BUCCONIDÆ. PUFFBIRDS.

(1608) **Bucco capensis** *Linn.*

Bucco capensis Linn., Syst. Nat., 1, 1766, p. 168 (Guiana).

Represented by two males from La Morelia and Florencia, respectively. This species does not appear to have been before recorded from Colombia.

La Morelia, 2; Florencia, 2.

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[1] Which appears to have priority over *G. l. innotatus* Ihering. *Cf.* Goeldi, Mus. Goeldi, V, 1909, p. 85.

(1610) **Notharcus hyperrhynchus leucocrissus** (*Scl.*).

Bucco leucocrissus Scl., P. Z. S., 1860, p. 284 (Babahoyo, w. Ecuador).

Represented by two specimens from Honda. These appear to agree with one from Chone, western Ecuador (which may be considered topotypical of *leucocrissus*) two from the Panama R. R. Line (McLeannan and Galbraith) and one from Tapaliza, eastern Panama, and differ from six Nicaraguan specimens, which I assume represent *dysoni*, in having the pectoral band conspicuously wider, the flanks more heavily barred, the margins to the rectrices narrower, more sharply defined and less extended down the inner vane, the outer primary black at the tip, instead of narrowly margined with white. The material in question clearly represents two forms, for the more southern of which the name *leucocrissus* (Scl.) appears to be applicable; but a specimen from Tehuantepec agrees more nearly with *leucocrissus* in the markings of rectrices and outer primary, though in flanks and pectoral band it is like *dysoni*, and a specimen from El Pilar, northeastern Venezuela, seems to be near *leucocrissus* though the pectoral band is evidently widened by the make of the skin. A specimen said to be from Pará, has the bill larger (culmen 46 mm.) than in any of those above-mentioned, while the pectoral band is as narrow as in *dysoni* and the flanks heavily barred as in the Honda and Panama specimens. Doubtless it represents *N. h. hyperrhynchus.*

Honda, 2.

(1613) **Notharcus pectoralis** (*Gray*).

Bucco pectoralis Gray, Gen. Birds, I, 1846, p. 74, pl. XXVI (So. Am.); Wyatt, Ibis, 1871, p. 374 (Naranjo); Scl. & Salv., P. Z. S., 1879, p. 536 (Neché); Hellmayr, P. Z. S., 1911, p. 1194 (Nóvita; Noanamá).

Inhabits the Tropical Zone of the Pacific coast and eastward, and to the lower Cauca and humid Magdalena Valleys.

Bagado, 1; Barbacoas, 7; Puerto Valdivia, 4; Nare, lower Magdalena, 1.

(1617) **Notharcus tectus subtectus** (*Scl.*).

Bucco subtectus Scl., P. Z. S., 1860, p. 296 (Esmeraldas, Ecuador); Scl. & Salv., P. Z. S., 1879, p. 536 (Neché); Robinson, Flying Trip, (R. Magdalena).
Bucco tectus subtectus Hellm., P. Z. S., 1911, p. 1195 (Tadó).

Like *Notharcus pectoralis* this species inhabits the Tropical Zone of the Pacific coast, lower Cauca and humid Magdalena Valleys. Specimens from the last-named locality have more white in the tail than those from Barbacoas, the white at the tip of the outer feather reaching the outer web.

Barbacoas, 4; Nare, 1; Puerto Berrio, 1; Malena, 2.

(1618) **Argicus macrodactylus** (*Spix*).

Cyppos macrodactylus Spix, Av. Bras., I, 1824, p. 51, pl. xxxix, fig. 2 ("In sylvis flum. Amazonum," Berl. & Hart. substitute Fonteboa).

Inhabits the Tropical Zone at the base of the Eastern Andes. Specimens from Villavicencio and Buena Vista average paler below and have the breast-band whiter and wider than those from La Morelia. I have no topotypical examples.

La Morelia, 3; Villavicencio, 4; Buena Vista, 2.

(1619) **Nystactes noanamæ** (*Hellm.*).

Bucco noanamæ Hellm., Bull. B. O. C., XXV, 1909, p. 20 (Noanamá, w. Col.); P. Z. S. 1911, p. 1195 (Noanamá; Tadó).

This well-marked species is known only from the headwaters of the San Juan and Atrato rivers. Our four specimens were collected by Mrs. Kerr. In the coloration of the upperparts this bird resembles *N. tamatia* with which it appears to be congeneric.

Iguamiando, 3; Quibdó, 1.

(1620) **Hypnelus ruficollis ruficollis** (*Wagl.*).

C[apito] ruficollis Wagl., Isis, 1829, p. 658 ("Mexico"; I suggest Bonda, Santa Marta, Colombia).

Bucco ruficollis Cass., Proc. Acad. N. S. Phila., 1860, p. 134 (R. Truando); Wyatt, Ibis, 1871, p. 374 (Santa Marta; Canuto); Robinson, Flying Trip, p. 157 (Barranquilla; R. Magdalena); Allen, Bull. A. M. N. H., XIII, 1900, p. 135 (Bonda; Valle Dupar; Santa Marta).

Inhabits the more arid portions of the Tropical Zone of northern Colombia, advancing up the Magdalena Valley to at least Puerto Berrio.

Turbaco, 4; La Playa, 3; Calamar, 4; Banco, 1; Varrud, 1; Puerto Berrio, 1.

(1629) **Nystalus radiatus** (*Scl.*).

Bucco radiatus Scl., P. Z. S., 1853, p. 122, pl. 50 ("Colombia" = Magdalena Valley); Scl. & Salv., P. Z. S., 1879, p. 536 (Remedios; Neché).

Inhabits the humid Tropical Zone of the Magdalena and lower Cauca

Valley and the Pacific coast north through Panama to Veragua, south to Guayaquil.

I provisionally place under the above name our twenty-two specimens of this species. Among these two from the vicinity of Honda agree with the figure of the type of *radiatus* in being buffy white below, but a third specimen from near Honda is much more fulvous below, while one from Puerto Berrio, but a short distance down the Magdalena from Honda, has the underparts rich fulvous and agrees in color with specimens from Panama. This type of coloration is also shown by Sclater's figure of a specimen from Neché, and by the remaining birds in our series.

Possibly the pale type of color may be restricted to the region about Honda at the junction of the humid and arid Cauca-Magdalena fauna, while birds of the fulvous type (*Bucco fulvidus* Salv. & Godm., Biol. Centr.-Am. Aves, II, 1896, p. 514, Veragua) occupy the humid portion of this fauna. I know of no similar case of distribution, however, and since the recognition of *fulvidus* would require that one of our Honda specimens be referred to that form, the other two to *radiatus*, I prefer for the present to consider them as one form which possibly may be locally dichromatic. Honda specimens average the smallest of the series.

Barbacoas, 2; Puerto Valdivia, 7; Puerto Berrio, 1; Honda, 1; west of Honda, 2.

Measurements of Females.

	Wing	Tail	Bill
Honda (pale below)	88	72	33
" "	86.5	69	31
Puerto Valdivia	88	71	31.5
" "	92	72	33
" "	90	70	31
Barbacoas,	92	78	33
Tapaliza, e. Panama	94	78	30

(1631) **Malacoptila fusca** (*Gmel.*).

Bucco fuscus Gmel., Syst. Nat., I, 1788, p. 408 (Cayenne).

Found only in the Tropical Zone at the eastern base of the Eastern Andes. Three specimens are more broadly streaked above and have the abdomen more fulvous than a single one from Guiana.

Andalucia (east slope, alt. 2000 ft.), 1; La Morelia, 2.

(1635) **Malacoptila mystacalis** (*Lafr.*).

Monasa mystacalis Lafr., Rev. et Mag., 1850, p. 215 ("Colombia"; I suggest Valparaiso, Santa Marta Mts.).

Malacoptila mystacalis Hellm., P. Z. S., 1911, p. 1197 (Loma Hermosa; Siató near Pueblo Rico); Allen, Bull. A. M. N. H., XIII, 1900, p. 134 (Valparaiso; Las Nubes; Santa Marta).

Inhabits the Subtropical Zone of all three ranges. I can detect no differences between our specimens and a large series from the Santa Marta Mts.

Nóvita Trail, 1; La Frijolera, 1; Salento, 3; about 20 miles w. of Honda, alt. 5000 ft., 1; Anolaima, 1.

(1637) **Malacoptila panamensis poliopis** *Scl.*

Malacoptila poliopis Scl., P. Z. S., 1862, p. 86, pl. viii (Esmeraldas, Ecuador).

Inhabits the Tropical Zone of the Pacific coast, north at least to Cisneros. Comparison of nine males and six females of true *poliopis* from western Ecuador (including four males from Esmeraldas) with four males and eight females from Panama and Costa Rica, shows that the former differ from the latter mainly, if not solely, in the deeper color of the breast. In the male this is cinnamon-rufous in *poliopis,* and ochraceous-tawny in *panamensis.* In the female of *poliopis* the breast is slightly deeper than in the male of *panamensis* while the female of *panamensis* has the breast ochraceous-buff.

Having thus determined the differentiating characters of these two forms, I have attempted to identify our ten males and five females from western Colombia. As might be expected, they show every stage of intergradation between the two extremes. Some specimens could be referred to one form as well as to the other, but on the whole specimens from north of San José are nearer to *panamensis* than to *poliopis.* Most of them are quite typical of the northern race, while a female from Los Cisneros is equally typical of *poliopis.*

Los Cisneros, 1; Barbacoas, 6.

(1637*a*) **Malacoptila panamensis panamensis** *Lafr.*

Malacoptila panamensis Lafr., Rev. Zool., 1847, p. 79 (Panama); Cass., Proc. Acad. N. S. Phila., 1860, p. 134 (R. Truando); Scl. & Salv., P. Z. S., 1879, p. 536 (Remedios).

Malacoptila panamensis poliopis Hellm., P. Z. S., 1911, p. 1196 (Sipi; Nóvita; El Tigre; Condoto).

As remarked under the preceding form, specimens from north of Cisneros are as a whole nearer to *panamensis* than to *poliopis,* though it is evident that the two completely merge in western Colombia.

Chocó, 1; Baudo, 1; Nóvita, 2; Dabeiba, 1; Alto Bonito, 2; Puerto Valdivia, 4.

(1641) **Micromonacha lanceolata** (*Deville*).

Bucco lanceolata Deville, Rev. et. Mag., 1849, p. 56 (Pampa del Sacramento, Upper Amazons).

A male from Buenavista, Nariño, is more heavily streaked below and the ventral region is deeper rufous than in two specimens from Zamora, southeastern Ecuador. This upper Amazonian species has not before been recorded from the Pacific coast where its occurrence admirably illustrates the type of distribution which I believe to have been evolved by the Andean uplift.

Buenavista, 1.

(1646) **Nonnula frontalis** (*Scl.*).

Malacoptila frontalis Scl., Ann. & Mag. Nat. Hist., Ser. 2, XIII, 1854, p. 479 (interior of Colombia).

A male collected by Fuertes at Algodonal, on the lower Magdalena River is doubtless typical of this species. Two Panama R. R. specimens and two from Cana, eastern Panama are much more deeply colored both above and below and evidently represent a different race. It would, however, be desirable to examine additional Colombian specimens before describing it.

Algodonal, 1.

(1650) **Monasa flavirostris** *Strickl.*

Monasa flavirostris Strickl., Cont. Orn., 1850, p. 47, pl. 48 (Peru).

Evidently restricted in Colombia to the Tropical Zone at the eastern base of the Eastern Andes. I have no Peruvian specimens for comparison.

La Morelia, 3; Florencia, 3; Villavicencio, 2; Buena Vista, 1.

(1653) **Monasa morphœus peruana** *Scl.*

Monasa peruana Scl., P. Z. S., 1855, p. 194 (Chamicuros, e. Peru).

Specimens from Amazonian Colombia are evidently to be referred to this race which, however, with its near ally, *M. m. morphœus* (*cf.* Hellm., Nov. Zool., XII, p. 297), is not adequately represented in our collection.

Florencia, 8.

(1654) **Monasa pallescens pallescens** *Cass.*

Monasa pallescens Cass., Proc. Acad. N. S. Phila., 1860, p. 134 (R. Truando); Hellm., P. Z. S., 1911, p. 1197 (Juntas, Rio Tamaná).

This form appears to be restricted to the Atrato and upper San Juan Valleys. There is considerable variation in intensity of color particularly of the wing-coverts in our ten specimens.

Salaqui, 1; Iguamiando, 1; Baudo, 3000–3500 ft., 4; Alto Bonito, 4.

(1655) **Monasa pallescens sclateri** *Ridgw.*

Monasa sclateri Ridgw., Proc. Biol. Soc. Wash., XXV, 1912, p. 89 ("Bogotá").

Monasa pallescens Wyatt, Ibis, 1871, p. 374 (Paturia); Scl. & Salv., P. Z. S., 1879, p. 536 (Remedios; Neché).

Inhabits the humid Tropical Zone in the lower Cauca and Magdalena Valleys. Comparison of thirteen specimens, with six topotypical examples of *M. p. pallescens* clearly indicates that *sclateri* is a race of *pallescens* distinguished only by its darker coloration, chiefly of the wing-coverts.

Puerto Valdivia, 7; 20 miles west of Honda, 6.

(1656) **Monasa nigrifrons** (*Spix.*).

Bucco nigrifrons Spix, Av. Bras., I, 1824, p. 53, pl. xli, fig. 2 ("In sylvis flum. Solimoëns").

Like *M. m. peruana* this species was found only in southeastern Colombia. Our specimens agree with others from Napo and Chapada, Matto Grosso.

La Morelia, 6.

FAMILY PICIDÆ. WOODPECKERS, PICULETS.

(1665) **Hypoxanthus rivolii rivolii** (*Boiss.*).

Picus rivolii Boiss., Rev. Zool., 1840, p. 36 (no locality — I suggest Chipaque, alt. 9500 ft., 15 miles e. of Bogotá).

This form appears to be restricted to the Eastern Andes where it occurs chiefly in the Temperate Zone. Seven specimens differ from specimens from the Central Andes and Ecuador in having, as a rule, the underparts deeper, more spots on the throat, a barred rump and, to some extent, barred tail-coverts, while the outer pair of rectrices has more or less yellowish brown on the center web. While Boissonneau gives no type-locality, his description obviously refers to the Bogotá bird.

El Piñon (above Fusugasugá), 3; Subia (near Bogotá), 1; Palo Hueco, Cundinamarca, 2; Chipaque, 1.

(1666) **Hypoxanthus rivolii brevirostris** *Tacz.*

Hypoxanthus brevirostris Tacz., P. Z. S., 1874, p. 546 (Higos, Cen. Peru).
Hypoxanthus rivolii Scl. & Salv., P. Z. S., 1879, p. 533 (Retiro, Sta. Elena).

Our specimens of this race are all from the Central Andes where the bird inhabits the Temperate Zone descending in clearings to the upper border of the Subtropical Zone.

Hargitt (Cat. Bds. B. M., XVIII, p. 31) has called attention to the large size of Colombian specimens of this form. I have no examples from Peru, but Ecuadorian birds are but little larger than measurements given by Taczanowski (*l. c.*) and are evidently very near true *brevirostris*. As the appended table shows, however, birds from the Central Andes are much larger. I can detect no differences in color, but those in size appear to be constant, and may warrant the separation of a northern form of *brevirostris*. It is surprising to find that three specimens from Merida agree with *brevirostris* rather than *rivolii* in color; while instead of showing the progressive increase in size from the south northward, exhibited by other birds in our series, these Merida birds are nearer specimens from Ecuador than those from Bogotá.

Laguneta, 1; Santa Isabel, 1; Volcancito, 1; El Eden, 2.

Measurements of Males.

Locality	Wing	Tail	Bill from Rictus	Bill from Nostril
Cen. Peru[1]	126	108	31	21
Ambato, Ecuador	131	98	32.5	24.5
Gualea, "	128	92	32	23
Santa Isabel, Col.	143	112	Broken	Broken
El Piñon (near Bogotá)	142	112	40	28.5
Palo Hueco " "	140	—	40	29
Chipaque "	143	117	41	28.5
Merida, Venezuela	131	95	39	25
" "	133	98.5	34	25

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[1] Taczanowski, P. Z. S., 1874, p. 547. The discrepancy in tail measurements is evidently due to a difference in methods of measurements. All the other measurements of the tail here given are from the insertion of the central pair of feathers to the end of the longest one.

Females.

Locality	Wing	Tail	Bill from Rictus	Bill from Nostril
Cen. Peru[1]	127	110	29	20
Loja, Ecuador	129	95	32	22.5
Gualea, "	125	90	32	23
Laguneta, Col.	139	104	38.5	25.5
El Eden, "	135	104	36.5	25.
" "	139	106	37	27
Palo Hueco (near Bogotá)	139	112	40	29
El Piñon "	142	112	37	28
Merida, Venezuela	133	95	34	25.5

(1672) **Chloronerpes xanthochlorus** *Scl. & Salv.*

Chloronerpes xanthochlorus Scl. & Salv., P. Z. S., 1875, p. 237 (San Cristobal, Tachira, Ven.), *Ibid.*, 1879, p. 533 (Remedios).

A female with much enlarged ovaries, taken at Remolino in the heavy forest of the lower Magdalena agrees with the plate of this species in the Catalogue of Birds of the British Museum (Vol. XVIII, pl. i).

Remolino, 1.

(1676) **Chloronerpes litæ** *Roth.*

Chloronerpes litæ Roth., Bull. B. O. C., XI, 1901, p. 70 (Lita, 3000 ft., n. Ecuador).

A female of this species, taken by Mrs. Kerr in the Baudo Mts. (3500 ft.) extends its range from the type-locality. This sex appears not to have been described. As it is represented by our apparently adult specimen there is no red upon the nape, and if the absence of this mark be characteristic, the species is even less closely related to *C. leucolæmus* than the markings of the male would indicate.

Baudo Mts., 1.

(1681) **Chloronerpes rubiginosus gularis** *Hargitt.*

Chloronerpes gularis Hargitt, Ibis, 1889, p. 230 (Santa Elena, Antioquia).

Chloronerpes rubiginosus Wyatt, Ibis, 1871, p. 380 (Ocaña to Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 533 (Retiro; Concordia; Sta. Elena).

Chloronerpes rubiginosus gularis Hellm., P. Z. S., 1911, p. 1187 (Loma Hermosa; Rio Jamaraya).

Inhabits the Subtropical Zone of Western and Central Andes and probably the western slope of the Eastern Andes. It is worthy of note that no form of this species is known from the Tropical Zone of the Pacific coast of Colombia but that in the Tropical Zone of the Pacific coast of Ecuador it is represented by *C. r. rubripileus* Salvad. and Fest., a smaller form in which the throat is usually spotted quite to the base of the bill, the rump paler, the outer tail-feathers quite as often barred as not (barred in ten out of eighteen specimens) while the female has less red in the crown.

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[1] See footnote p. 160.

A female from La Candela in the Central Andes at the head of the Magdalena Valley, exhibits in a most interesting way the characters of both *gularis* and *rubiginosus,* and although not a geographical intermediate, it suggests the intergradation of these forms. It has the throat spotted with white and well-defined black malar stripe and unbarred rectrices of *gularis,* but the crown is gray, the red being confined to the nuchal region; the rump is nearly the color of the back and the breast is narrowly barred with buffy as in *rubiginosus.*

Specimens from the Central Andes are larger and have the abdominal region and under tail-coverts less definitely barred than in those from the Western Andes. The minimum size appears to be reached at the type-locality, whence a female measures, wing, 125; tail, 75.5; culmen, 26 mm.; as compared with wing, 115; tail, 70; culmen, 24 mm. in females from San Antonio. Specimens from La Frijolera are intermediate in size.

La Frijolera, 2; San Antonio, 8; Andes w. of Popayan (10340 ft.), 1; Cerro Munchique, 1; Cali, 2; Miraflores, 1; Salento, 2; Sta. Elena, 1; Barro Blanco, 2; Cen. Andes w. of Honda (5000 ft.), 1; La Candela, 1 (app. *rubiginosus*).

(1687*a*) **Chloronerpes rubiginosus buenavistæ** *Chapm.*

Chloronerpes rubiginosus buenavistæ Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 386 (Buena Vista, Col.).

Char. subsp.— Similar to *C. r. meridensis,* but upperparts and olive bars of underparts darker, cheeks grayer, bill longer; similar to *C. r. canipileus* (d'Orb.) but with much more red and consequently darker, less golden in color. Similar to *C. r. alleni* (Bangs) but olive bars of underparts wider and yellowish ones narrower; tail always (?) unbarred; posterior underparts, especially lower tail-coverts, less distinctly barred.

Buena Vista, 5.

(1697) **Chrysoptilus punctigula guttatus** (*Spix*).

Picus guttatus Spix, Av. Bras., 1, 1824, p. 61, pl. liii, fig. 1 (in sylvis flum. Amazonum).

An immature female from La Morelia in Amazonian Colombia is apparently to be referred to this Amazonian species. It is much more deeply colored above than a specimen of *punctipectus* in similar plumage from Maripa on the lower Orinoco, and is nearer in color and pattern to an immature female from the headwaters of the Huallaga River, Peru. Two adults from Moyobamba, Peru, loaned me by the Field Museum, are somewhat darker above than one from Santarem, Brazil, indicating that true *punctigula* ranges the length of the Amazon. Indeed I can find but little difference in color between these specimens and two adults from Paramaribo which may be assumed typically to represent true *punctigula*. The latter are, however, slightly smaller and have a shorter bill.

La Morelia, 1.

(1698) **Chrysoptilus punctigula punctipectus** *Cab. & Hein.*

Chrysoptilus punctigula punctipectus CAB. & HEIN., Mus. Hein., IV, 1863, p. 163 (Venezuela).

Specimens from the vicinity of Villavicencio appear typically to represent this form. They agree on the whole with an adult from Cumaná, loaned me by the Field Museum, and since Hellmayr (Abhd. Wiss., 1906, p. 607) refers to this form specimens from Caicara and Altagracia on the middle Orinoco, it evidently occupies the larger part of Venezuela. Compared with true *punctigula* of which, thanks to Mr. Penard, I have three specimens from the vicinity of Paramaribo, *punctipectus* differs mainly in having the back warbler-green instead of antique-brown, and in being larger (wing 119 mm. as compared with 112 mm.).

Buena Vista, 1; Villavicencio, 2; Barrigon, 1.

(1699) **Chrysoptilus punctigula ujhelyii** *Madar.*

Chrysoptilus ujhelyii MADAR., Orn. Monats., XX, 1912, p. 97 (Aracataca, Santa Marta).

Chrysoptilus guttatus ALLEN, Bull. A. M. N. H., XIII, 1900, p. 136 (Cienaga).

This form of the arid, Caribbean, coastal region, is one of the most distinct of the group. In its white, black-streaked throat it agrees with *striatigularis*, but it differs markedly from that race in its paler, less spotted underparts and in the much narrower, almost obsolete bars of the back. We have one Santa Marta specimen.

Lower Atrato, 1; La Playa, 1; Calamar, 1.

(1699*a*) **Chrysoptilus punctigula striatigularis** *Chapm.*

Chrysoptilus punctigula striatigularis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 611 (Cali).

Chrysoptilus punctigularis Scl. & Salv., P. Z. S., 1879, p. 533 (Remedios).

Char. subsp.— Differs from all other described forms of *Chrysoptilus punctigula*, except *C. p. ujhelyii*, in having the throat white streaked with black instead of black spotted with white; differs from *C. p. ujhelyii* in being darker, with the spots below, particularly on the flanks, larger, the upperparts and wings with clearly defined broad black bars (much narrower and nearly obsolete, dorsally, in *ujhelyii*); differing from *C. p. punctipectus* in the pattern of the throat, as described above, in being browner above and in having the spots of the underparts larger, more numerous, and extending to the flanks and abdominal region.

Inhabits the Tropical Zone of Colombia west of the Eastern Andes and south of the semi-arid Caribbean coastal region.

The occurrence of *Chrysoptilus punctigula punctipectus* in the Tropical Zone of the eastern slope of the Eastern Andes and of *C. p. striatigularis* in this zone on the western slope of the same range brings both forms into the Bogotá region and hence into 'Bogotá' collections. In default of proper data, their well-marked racial differences have evidently been considered to represent individual variations and we have, therefore, an additional illustration of the confusion wrought by the use of unlabeled skins from a region containing at least two distinct faunas and double the number of zones.

Noanamá, 1; Cali, 2; Rio Frio, 1; near Honda, 1; Puerto Berrio, 2.

(1702) **Melanerpes flavigula** *Malh.*

Melanerpes flavigula Malh., Rev. et Mag., 1849, p. 522 (Colombia).

Melanerpes flavigularis Wyatt, Ibis, 1871, p. 381 (7000 ft. up. "Temperate regions"); Scl. & Salv., P. Z. S., 1879, p. 533 (Retiro; Concordia; Sta. Elena).

A locally common bird in the Subtropical Zone of all three ranges; ranging upward to the Temperate Zone.

Paramillo (11,000 ft.), 1; Las Lomitas, 2; San Antonio, 6; Cerro Munchique, 4; Gallera, 1; Miraflores, 1; Salento, 1; Laguneta, 4; Sta. Elena, 1; San Agustin, 2; La Candela, 1; Palo Hueco, Cundinamarca, 14.

(1703) **Melanerpes cruentatus** (*Bodd.*).

Picus cruentatus Bodd., Tabl. Pl. Enl., 1783, p. 43 (Cayenne).

Common in the Tropical Zone at the eastern base of the Eastern Andes. A single, immature female from Paramaribo has the postocular stripes whiter than in any of our specimens.

Florencia, 6; La Morelia, 6; Buena Vista, 7; Villavicencio, 5.

(1708) **Melanerpes pucherani pucherani** (*Malh.*).

Zebrapicus pucherani Malh., Rev. et Mag., 1849, p. 542 ("Tabago" = Colombia — *cf.* Hellm. P. Z. S., 1911, p. 1188.)

Melanerpes pucherani pucherani Hellm., *l. c.* (Nóvita; Guineo).

Inhabits the Tropical Zone of the Pacific coast and lower Cauca River.

Alto Bonito, 2; Quibdó, 1; Baudo, 1; Noanamá, 2; San José, 2; Los Cisneros, 2; Barbacoas, 6; Puerto Valdivia, 3.

(1709 & 1710) **Melanerpes rubricapillus rubricapillus** (*Cab.*).

Centurus rubricapillus Cab., J. f. O., 1862, p. 328 (Barranquilla, Col.).

Melanerpes subelegans neglectus Rich, Proc. U. S. N. M. 1895, p. 668 (Bogotá).

Melanerpes wagleri sanctæ-martæ Bangs, Proc. Biol. Soc. Wash. 1898, p. 134 (Santa Marta); Allen, Bull. A. M. N. H., XIII, 1900, p. 136 (Bonda; Santa Marta).

Our specimens are all from the Tropical Zone of northern Colombia and the Magdalena Valley, as far south as Chicoral. Five males and five females from Honda and vicinity may be considered as topotypical of *neglectus* Rich., while of *sanctæ-martæ* Bangs we have an excellent topotypical series of twenty-six specimens. Careful comparison of this and other material from intermediate localities fails to reveal any constant differences between these alleged forms. In specimens from Santa Marta the bill *averages* larger, but the difference is bridged by individual variation and is certainly not sufficient in itself to warrant the recognition of two forms. In color, Magdalena Valley birds agree with those from Santa Marta; in both the red of the crown is continuous with that of the nape.

In view of the evident identity of Colombian birds, I fail to see how we can avoid accepting Cabanis' name, based on Barranquilla specimens, for this form (*cf.* also Ridgway, Bull. 50, VI, pp. 53, 75).

Upper Sinu River (200 ft.), 3; Algodonal, Magdalena River, 2; Magdalena River, 2; Honda and vicinity, 9; Chicoral, 1.

Measurements.

	Wing	Tail	Culmen
Five Males from Bonda	104–107.5	50–53	22.5–26
Five Males from Honda	102–107	50–54	22.5–24.5

(1715) **Veniliornis oleaginus fumigatus** (*Lafr. & d'Orb.*).

Picus fumigatus Lafr. & d'Orb., Voy. Am. Merid., Ois., 1839, p. 380, pl. lxv, fig. 1 (Chiquitos, Bolivia).

Our specimens from the Subtropical Zone of the Eastern Andes, agree on the whole with a male from Yungas, Bolivia, and a female from Inca Mine, southeast Peru, which may be considered as typical of *fumigatus*. A female from Buena Vista, our only specimen from the eastern slope of the Eastern Andes, is considerably darker than any other bird in our series.

La Candela, 2; near San Agustin, 1; near Fusugasugá, 5; Palo Hueco (near Pacho), 1; Buena Vista, 1.

(1715*a*) **Veniliornis oleaginus aureus** *Chapm.*

Veniliornis oleaginus aureus Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 612 (Central Andes south of Popayan, Col.).

Char. subsp.— Similar to *V. o. fumigatus*, but back richer, more golden, auricular region averaging paler, wing averaging shorter, bill longer; resembling *V. o. sanguinolentus* in general color but wings and their coverts externally with less golden wash, more as in *fumigatus;* white spots on wing-quills larger, the short outer primary usually showing trace of white, the second (from without) primary with three instead of two white spots; size, larger.

Inhabits the Subtropical Zone of the Western Andes and western slope of the Central Andes.

Salencio, 1; Las Lomitas, 2; San Antonio, 3; Gallera, 1; Popayan, 2; La Sierra, 1; Miraflores, 1; Sta. Elena, 1.

(1719*a*) **Veniliornis nigriceps equifasciatus** *Chapm.*

Veniliornis nigriceps equifasciatus Chapm., Bull. A. M. N. H., XXXI, 1912, p. 144 (Santa Isabel, Cen. Andes, 12000 ft., Colombia).

Char. subsp.— Similar to *Veniliornis nigriceps nigriceps* (Lafr. & d'Orb.) but olive-green and yellowish bars on underparts of equal width.

Found by us only in the Temperate Zone of the Central Andes.

Santa Isabel, 2; Almaguer, 1.

(1720) **Veniliornis dignus** (*Scl. & Salv.*).

Chloronerpes dignus Scl. & Salv., P. Z. S., 1877, p. 20, pl. i (Remedios; Antioquia); *Ibid.* 1879, p. 533 (Jerico).

Our five specimens represent localities in the Subtropical Zone of all three ranges. Fuertes' capture of a male at Fusugasugá extends the known range of the species (hitherto recorded from Antioquia) into the Bogotá region where, however, we may assume it to be rare since it seems to have escaped native collectors.

San Antonio, 1; Cerro Munchique, 2; Salento, 1; Fusugasugá, 1.

(1727) **Veniliornis fidelis** (*Harg.*).

Dendrobates fidelis Harg., Ibis, 1889, p. 59 (Bogotá).

A male from Buena Vista and a pair from Villavicencio agree with the description of this species, which appears to be a representative of *V. olivinus*.

Buena Vista, 1; Villavicencio, 2.

(1733) **Veniliornis ruficeps hæmatostigma** (*Malh.*).

Mesopicus hæmatostigma Malh., Picidæ, II, 1862, p. 72, pl. lxi, figs. 2–5 (Peru).

Two specimens from La Morelia are evidently to be referred to this form, of which, however, I have no authentic specimens for comparison.

La Morelia, 2.

(1738) **Veniliornis kirki cecilii** (*Malh.*).

Mesopicus cecilii Malh., Rev. et Mag. de Zool., 1849, p. 538 (Colombia).

Chloronerpes ceciliæ Scl. & Salv., P. Z. S., 1879, p. 533 (Antioquia; Remedios; Neché).

Veniliornis kirkii cecilii Hellm., P. Z. S., 1911, p. 1188 (Guineo, Rio Calima).

Found throughout the greater part of the Tropical Zone in Colombia though we took no specimens east of the Andes. I can detect no racial differences in our series of sixteen specimens.

Juntas de Tamaná, 1; Los Cisneros, 1; Barbacoas, 7; Puerto Valdivia, 1; Rio Frio, 2; Chicoral, 3; Honda, 2; Malena, 1; Boca de Chimi, 1.

(1751) **Celeus loricatus loricatus** (*Reich.*).

M[eiglyptes] loricatus Reich., Scans. Pic., 1854, p. 405, pl. dclxxxi, figs. 4495–6 ("N. Peru").

Celeus loricatus Scl. & Salv., P. Z. S., 1879, p. 533 (Remedios; Neché); Hellm., P. Z. S., 1911, p. 1188 (Nóvita).

Inhabits the Tropical Zone of the Pacific coast northward, at least to Baudo on the Pacific coast, and on the eastern side of the Atrato River at least to Alto Bonito and eastward to the lower Cauca and Magdalena Valleys. Males from Alto Bonito and Puerto Valdivia show in their deeper color below some approach toward *mentalis* but in other respects, particularly the barring of the upperparts, they are obviously referable to *loricatus*.

On the western side of the lower Atrato Valley and north at least to the Panama R. R., it is replaced by *C. l. mentalis* Cass.

I have seen no Peruvian specimens of this species. Should the southwest Colombian bird prove to be different it would doubtless stand as *Celeus loricatus fraseri* (Malh.) described from Babahoyo, w. Ecuador.

Puerto Valdivia, 1; Alto Bonito, 1; Baudo, 1; Nóvita, 1; Barbacoas, 4.

(1751*a*) **Celeus loricatus mentalis** *Cass.*

Celeus mentalis Cass., Proc. Acad. N. S. Phila., 1860, p. 137 (Turbo; R. Atrato; type in Nat. Mus., examined).

Celeus squamatus Lawr., Ibis, 1863, p. 184 (Lion Hill, Panama; type in Am. Mus., examined).

Inhabits eastern Panama from at least the Canal Zone eastward to the western side of the lower Atrato Valley.

Comparison of Cassin's type, a female in the National Museum, and nine specimens from eastern Panama (Cana, Marraganti, Chepigana, El Real, Tapaliza, Boca de Cupe) with our eight specimens of *loricatus,* shows that *mentalis* is a strongly marked form which may be distinguished from the more southern race by the almost entire absence of bars on the back and inner wing-quills, the smaller black area in the feathers of the crown, more ochraceous underparts on which the black markings are narrower and a more extensive ochraceous-tawny area on the throat, which in the male separates the black markings of the breast from the red of the upper throat.

Examination of Lawrence's type of *Celeus squamatus* shows that it is referable to this form.

Rio Salaqui, 1.

(1760) **Campephilus rubricollis** (*Bodd.*).

Picus rubricollis Bodd., Tabl. Pl. Enl., 1783, p. 37 (Cayenne).

A female from La Morelia differs from two from British Guiana in having the outer webs of the inner primaries rufous from a point just beyond the primary coverts to their base. A small amount of rufous is therefore visible in the closed wing, and the bird thus shows some approach toward *C. trachelopyrus.*

La Morelia, 2.

(1762) **Campephilus melanoleucus** (*Gmel.*).

Picus melanoleucos Gmel., Syst. Nat., I, 1788, p. 426 (Surinam).

Found only in the Tropical Zone at the eastern base of the Eastern Andes.
Florencia, 1; Villavicencio, 1.

(1763) **Campephilus malherbii** *Gray.*

Campephilus malherbii Gray, Gen. Birds, II, 1845, p. 436, pl. cviii (Bogotá); Wyatt, Ibis, 1871, p. 380 (Naranjo); Scl. & Salv., P. Z. S., 1879, p. 532 (Cauca; Concordia; Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 137 (Bonda; Valparaiso; El Libano; Santa Marta).

Dryocopus malherbei Cass., Proc. Acad. N. S. Phila., 1860, p. 137 (Turbo).

This species is distributed throughout the greater part of Andean Colombia and while confined chiefly to the Subtropical Zone, ranges from sea-level to over 10,000 feet, an exceptionally extended altitudinal distribution.

Alto Bonito, 1; Dabeiba, 1; Peque, 2; Nóvita, 1; Noanamá, 1; Puerto Valdivia, 2; Las Lomitas, 3; San Antonio, 4; Andes w. of Popayan (10,340 ft.), 1; Miraflores, 3; Salento, 1; Turbaco, 2; La Palma, 1; La Candela, 1; Puerto Berrio, 1.

(1765) **Campephilus pollens** (*Bonap.*).

Picus pollens Bonap., Atti Sest. Riun. Sci. Ital., 1845, p. 406 (Colombia).

Campephilus pollens Scl. & Salv., P. Z. S., 1879, p. 532, (Sta. Elena; Frontino).

Inhabits the Temperate, and upper part of the Subtropical Zones of all three ranges.

Cerro Munchique, 1; La Florida, 4; Cocal, 4; Almaguer, 2; Laguneta, 3; Santa Isabel, 3; El Roble, 1.

(1768) **Cniparchus hæmatogaster splendens** (*Harg.*).

Campophilus splendens Harg., Ibis, 1889, p. 58 ("Bogotá" *errore;* I suggest Puerto Valdivia; Antioquia, Col.).

Campephilus hæmatogaster Scl. & Salv., P. Z. S., 1879, p. 532 (Sta. Elena; Remedios).

This race appears to be restricted to the Tropical Zone of the Pacific coast eastward through Antioquia, and northward to Veragua. Comparison of our series (including twelve skins from eastern Panama) with two specimens from Peru confirms the characters on which this form is based. A native 'Bogotá' female is referable to true *hæmatogaster*, which evidently, therefore, extends from Peru up to the Eastern Andes of Colombia.

Alto Bonito, 2; Barbacoas, 1; Puerto Valdivia, 1.

(1770*a*) **Ceophlœus lineatus mesorhynchus** *Cab. & Hein.*

C[eophlœus] mesorhynchus Cab. & Hein., Mus. Hein., IV, 1863, p. 86 (Costa Rica).

Dryocopus lineatus Wyatt, Ibis, 1871, p. 380 (Naranjo); Scl. & Salv., P. Z. S., 1879, p. 532 (Sta. Elena).

Ceophlœus lineatus lineatus Hellm., P. Z. S., 1911, p. 1189, (Noanamá); Allen, Bull. A. M. N. H., XIII, 1900, p. 136 (Minca; Valparaiso; Santa Marta).

Found throughout the greater part of the Tropical Zone west of the Eastern Andes. Comparison with an adequate series of *C. l. lineatus* from British Guiana, and of *C. l. mesorhynchus* from Panama and Santa Marta, shows that all our specimens belong to the latter form.

Alto Bonito, 1; Noanamá, 1; Cali, 3; La Manuelita, 2; Miraflores, 1; Guengüe, 1; Puerto Berrio, 1; near Honda, 2.

(1776) **Picumnus cinnamomeus** *Wagl.*

Picumnus cinnamomeus Wagl., Isis, 1829, p. 646 (Carthagena); Allen, Bull. A. M. N. H., XIII, 1900, p. 137 (Bonda).

Evidently restricted to the arid Tropical Zone of northern Colombia.

La Playa, 1; Varrud, 1.

(1795) **Picumnus squamulatus squamulatus** *Lafr.*

Picumnus squamulatus Lafr., Rev. et Mag., 1854, p. 208 (Colombia).

A common species at Buena Vista and Villavicencio, and extending westward into the mountains as far as Quetame.

Buena Vista, 7; Villavicencio, 6; Quetame, 1.

(1808) **Picumnus olivaceus olivaceus** *Lafr.*

P[icumnus] olivaceus Lafr., Rev. Zool., 1845, p. 7 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 532 (Medellin); Stone, Proc. Acad. N. S. Phila., 1899, p. 305 (Ibagüe).

Our fifteen specimens of this form indicate that it occupies the lower Cauca and Magdalena Valleys and ranges up the western slope of the

Eastern Andes and eastern slope of the Western Andes of the Subtropical Zone. The occurrence of this form at Rio Toché and El Eden, and of *P. granadensis* at Salento, indicates the faunal affinities of the first-named localities with the Magdalena Valley and of the last with the Cauca Valley.

Nine males from the Magdalena Valley have the crown streaked with scarlet, but a male from La Frijolera in the Lower Cauca region has the crown streaked with cadmium-orange. It thus resembles a male from Tacarcuna in eastern Panama, but in other respects these two males and also two females from eastern Panama (Tacarcuna and Tapaliza) agree with *P. o. olivaceus.*

In the color of the crown-stripes these males agree with *P. o. flavotinctus* of western Panama and Costa Rica, but in the jet blackness of the crown the Frijolera specimen resembles *olivaceus,* while the Panama specimens show an approach toward *flavotinctus.* They are thus intermediate between these two races, instead of *olivaceus* and *panamensis* of the Canal Zone as we should expect. In any event it is important to note that representatives of *olivaceus* occur at La Frijolera and at Tacarcuna, while at Peque southwest of the first-named locality *Picumnus granadensis antioquensis* occurs.

La Frijolera, 1; El Eden, 1; Rio Toché, 2; La Candela, 1; San Agustin, 3; La Palma, 1; Chicoral, 2; Honda, 2; 20 miles w. of Honda,[1] 4; Puerto Berrio, 1; Malena, 1.

(1810) **Picumnus olivaceus harterti** *Hellm.*

Picumnus olivaceus harterti HELLM., Bull. B. O. C., XXIII, 1909, p. 67 (Paramba, n. w. Ecuador).

A specimen from Barbacoas agrees with an essentially topotypical series from Esmeraldas southward, in Ecuador, of which five males have the crown-stripes cadmium-yellow. In its more olivaceous color and streaked under-parts this race is much nearer true *olivaceus* than to *canus,* its nearest geographical congener.

It is worthy of note that, as in other cases, the Barbacoas form of this species agrees with the one from Ecuador rather than with the one from the more northern part of the Colombian coast.

Barbacoas, 1.

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[1] These specimens are included by Ridgway (Bull. 50, VI, p. 305) under "*P. o. granadensis.*"

(1809) **Picumnus granadensis granadensis** *Lafr.*

P[icumnus] granadensis Lafr., Rev. Zool., 1847, p. 78 (Cali, Col.).

Picumnus canus Bangs, Proc. Biol. Soc. Wash., XXIII, 1910, p. 72 (Naranjito, R. Dagua).

Picumnus olivaceus granadensis Hellm., P. Z. S., 1911, p. 1189 (Primavera, 5200 ft., San Isidro; Media Luna, 2700 ft.; San Antonio; Rio Dagua).

Inhabits the Tropical Zone of the Pacific coast, north of Barbacoas, and the Cauca Valley, ranging upward to the Subtropical Zone in the Western Andes and western slope of the Central Andes. Represented at the northern end of the Western Andes by *P. g. antioquensis.* The occurrence of the olivaceous races (*olivaceus, panamensis, harterti*) at the east, north, and south of the range of this species, the absence of intergrading specimens, and its strongly marked characters indicate the specific distinctness of this form. Furthermore, its stability is indicated by its occurrence in the humid coast region (Cisneros, etc.) and in the comparatively dry Cauca Valley (Rio Frio) without apparent change. On the other hand, we have yet to find *granadensis* and one of the three forms mentioned above associated; they have, however, been found in the same faunal area. Thus, at Barbacoas we have taken the richly-colored *P. olivaceus harterti* and at Cisneros wholly typical examples of *granadensis* with whitish, comparatively unstreaked underparts and grayish back. If, therefore, *granadensis* is a representative form of *olivaceus* we should have the palest form occurring in what is doubtless the most humid portion of the area concerned. To my mind it does not follow that *granadensis* is a representative form of *olivaceus* merely because it occurs in an area where no other species of *Picumnus* is found which could be so considered. Western Colombia is so often without forms common to Ecuador and Panama, northern and central Colombia, that the absence of some form of *olivaceus* between the ranges of *P. o. olivaceus* and *P. o. harterti* need not surprise us.

San Antonio, 1; Rio Frio, 2; Los Cisneros, 2; Gallera, 1.

(1809*a*) **Picumnus granadensis antioquensis** *Chapm.*

Picumnus granadensis antioquensis Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 640 (Peque, W. Andes, Antioquia, Col.).

Char. subsp.— Similar to *P. g. granadensis* but whole breast grayish, the flanks and abdominal region distinctly streaked. Differs conspicuously from all the races of *P. olivaceus* in being less yellow throughout.

Represents *P. g. granadensis* in Antioquia.

Peque, 2; Medellin, 1.

ORDER **PASSERIFORMES.**

FAMILY HYLACTIDÆ. TAPACOLAS.

(1812) **Scytalopus niger** (*Swains.*).

Platyurus niger SWAINS., Anim. in Menag., 1838, p. 323 (Chile).

This, the most common species of the genus, is found in all three ranges of the Andes where it is restricted in the main, to the Temperate Zone. Local conditions bring it down occasionally to the zone below. There is some variation in size and intensity of color in our series but it appears to be individual, and on the whole our specimens agree with one from Valparaiso, Chile. The juvenal plumage is more or less washed with rusty, paler below, and is never as distinctly barred as in *S. cinereicollis* and *S. micropterus*, the bars, when present, being comparatively obsolete. There is no indication of bars in the tail or of white in the crown.

This widely distributed species has been generally confused with *Scytalopus magellanicus* (Gmel.) which, as shown by thirteen specimens recently secured by Beck in the Cape Horn region for the Brewster-Sanford collection, is a wholly different species.[1]

Andes w. of Popayan, 8; Cerro Munchique, 9; Cocal, 3; Almaguer, 4; Valle de las Pappas, 3; Laguneta, 3; Santa Isabel, 2; Sta. Elena, 1; Fusugasugá, 1; El Roble, 2; El Piñon, 2.

(1812*a*) **Scytalopus canus** *Chapm.*

Scytalopus canus CHAPM., Auk, XXXII, 1915, p. 412 (Paramillo, 12,500 ft., Western Andes, Col.).

Char. sp.— With a general resemblance to *S. niger* (Swains.) [2] but adult grayer throughout, the underparts paler than the upperparts, the center of the abdomen grayer than surrounding parts; tail shorter, the feathers narrower and softer, their barbs, apically, more or less separated; bill shorter, feet and tarsi more slender; apparently closely resembling, and perhaps representing, *S. unicolor* Salv. of Peru, but much smaller, the female of the same color as the male.

The juvenal plumage is evidently conspicuously barred above and below with cinnamon-buff and therefore resembles that of *S. griseicollis* rather than that of *S. niger*.

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[1] Cf. Menegaux and Hellmayr (Bull. Mus. d'Hist. Nat., 1905, p. 379) who have already reached a similar conclusion, and also Chapman, Auk, XXXII, 1915, p. 411.

[2] *S. magellanicus* auct. plur., nec. Gmel., excl. more southern references.

Miller and Boyle secured an excellent series of ten specimens of this species in that elevated region near the northern end of the Western Andes known as the Paramillo. In general coloration it resembles *Myornis senilis* with which, however, it has no close relation. Although approaching in size and superficially resembling *Scytalopus niger* (Swains.), the more loosely constructed rectrices and differences in the color of the young indicate that it is not a representative of that species.

Paramillo, 10.

(1817) **Scytalopus griseicollis** (*Lafr.*).

Merul[axis] grisei-collis Lafr., Rev. Zool., 1840, p. 103 ("Bogotá"; type examined).

Found by us only in the Temperate Zone of the Eastern Andes near Bogotá. Examination of the type of Lafresnaye's *Merulaxis squamiger* shows it to be based on the juvenal plumage of this species. Mr. Bangs sends me, in addition to the types of *griseicollis* and *squamiger*, a Lafresnaye specimen (No. 4854) labelled "*Scytalopus erythropterus* Lafr." I cannot find that this name was published. The bird is a not fully adult specimen of *Scytalopus griseicollis*.

The whitish abdomen, unbarred tawny flanks and rump, and brownish tail, distinguish the adult of this species. The juvenal plumage is conspicuously and evenly barred both below and above.

'Bogotá,' 6; El Roble, (8,000 ft.), 1; El Piñon, 2; Chipaque, 1; Tocaimito (above Bogotá, 10,500 ft.), 3.

(1819) **Scytalopus sylvestris** *Tacz.*

Scytalopus sylvestris Tacz., P. Z. S., 1874, p. 138 (Pallaypampa, cen. Peru).

I refer to this species, of which I have seen no authentic specimens, an adult female from the Paramo of Santa Isabel, in the Central Andes. It has the forehead grayish, the rest of the upperparts somewhat light mummy-brown, the feathers of the back narrowly margined with black; the tail is somewhat browner than the back; the underparts are deep neutral gray; the flanks, ventral region, and under tail-coverts barred with black and ochraceous-tawny. A young male from the same locality is passing from juvenal into adult plumage. It resembles the adult but has more barred feathers in wings and on the nape, and the three remaining tail-feathers of the juvenal plumage are distinctly barred with black and ochraceous-tawny.

Paramo of Santa Isabel, 2.

(1822) **Scytalopus micropterus micropterus** *Scl.*

Scytalopus micropterus Scl., P. Z. S., 1858, p. 69 (Napo, Ecuador).
Scytalopus analis Auct. (not of Lafr. = *Triptorhinus paradoxus* Kittl.; type examined).

Not uncommon in the denser low growth of the heavy forests of the Subtropical Zone of all three ranges and occasionally extending upward to the lower border of the Temperate Zone and rarely downward to the Tropical Zone. All our twenty-four specimens have the flanks, lower abdomen, rump and upper tail-coverts barred with rusty black. The white crown-patch appears to be a purely individual character not dependent upon age, sex, season or locality. It is well developed in some immature specimens and wanting in others, is present or absent in both sexes, and in specimens from the same locality. Nine specimens possess it to a greater or less degree, fifteen are without it.

On examination of Lafresnaye's type of "*Mer* [*ulaxis*] *analis*" (Rev. Zool., 1840, p. 104) loaned me by Mr. Bangs, I find it to be an adult specimen of *Triptorhinus paradoxus* Kittl., a fact confirming Lafresnaye's belief (*l. c.*) that his specimen came from "Paraguay ou du Chili." Kittlitz's name has nine years priority and Lafresnaye's consequently becomes a pure synonym of it. The bird hitherto known as *Scytalopus analis* (Lafr.) will apparently therefore become *Scytalopus micropterus* Scl., as above. I have seen no Napo specimens but our collection contains a Bogotá skin labelled by Sclater "*Agathopus micropterus.*" The generic name he subsequently abandoned.

Alto Bonito, 2; Las Lomitas, 1; San Antonio, 1; Pavas, 1; Andes w. of Popayan (10,340 ft.), 1; Ricaurte, 1; Miraflores, 2; Salento, 3; Laguneta, 1; El Eden, 2; La Palma, 3; La Candela, 2; Andalucia (3,000 ft.), 1; 'Bogotá,' 2; Buena Vista, 1.

(1822*a*) **Scytalopus infasciatus** *Chapm.*

Scytalopus infasciatus Chapm., Auk, XXXII, 1915, p. 414 (Paramo de Beltran, 9750 ft., near Bogotá).

Char. sp.—In general color resembling *Scytalopus micropterus micropterus* Scl. but somewhat paler, the tail brownish, the rump and flanks tawny, unbarred as in *S. griseicollis* Lafr., bill black, as in *micropterus.*

This species, which further illustrates the apparent exhaustlessness of the Bogotá region as well as of the genus *Scytalopus*, is based on a specimen presented to the American Museum by Hermano Apolinar Maria, the eminently efficient Director of the Instituto de la Salle in Bogotá.

Paramo de Beltran, 1; El Roble, 1.

(1815) **Myornis senilis** (*Lafr.*).

Merul[axis] senilis Lafr., Rev. Zool., 1840, p. 103 ("Bogotá"; type examined).
Myornis senilis Chapm., Auk, XXXII, 1915, p. 410.

Inhabits the Temperate Zone of both the Central and Eastern Andes.

Laguneta, 1; El Piñon, 1.

(1836) **Acropternis orthonyx** (*Lafr.*).

Merulaxis orthonyx Lafr., Rev. Zool., 1843, p. 131 (Colombia).
Acropterynx orthonyx Scl. & Salv., P. Z. S., 1879, p. 528 (Sta. Elena).

Two specimens collected by Allen at Laguneta in the Temperate Zone are the only ones secured by our expeditions. They agree with others from 'Bogotá' and Merida, Venezuela.

Laguneta, 2.

Family CONOPOPHAGIDÆ. Gnateaters.

(1839) **Conopophaga aurita** (*Gmel.*).

Turdus auritus Gmel., Syst. Nat., I, 1789, p. 827 (Cayenne).

Found only in the Tropical Zone of Amazonian Colombia. An adult male is considerably smaller than one from British Guiana, has the back browner and with fewer black margins, while the breast is paler and the abdominal region more suffused with ochraceous. If the differences named are constant, the bird from the base of the Andes is deserving of separation. An adult female more nearly resembles the Guiana male in the color of the parts named. I have no female from Guiana.

La Morelia, 2; Florencia, 1.

	Sex	Wing	Tail	Tarsus	Culmen
Florencia, Col.	♀	64	30	25	14
La Morelia, Col.	♂	64.5	28	25	14
Rockstone, B. G.	♂	70	30	28	14.5

(1846) **Conopophaga castaneiceps castaneiceps** *Scl.*

Conopophaga castaneiceps Scl., P. Z. S., 1857, p. 47 (Bogotá).

Not rare in heavy forests of the lower part of the Subtropical Zone in the Eastern Andes at the head of the Magdalena, but retiring in habits and difficult to collect. We have also two females from the western slope of the Central Andes above the lower Cauca. In color and size of the bill they appear to be intermediate between *castaneiceps* and *chocoensis*, but in default of females of that race for comparison I refer them to *castaneiceps*.

La Frijolera, 2; La Candela, 4; Andalucia (5000 ft.), 4; Buena Vista, 4.

(1846*a*) **Conopophaga castaneiceps chocoensis** *Chapm.*

Conopophaga castaneiceps chocoensis Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 641 (Baudo Mts., Chocó, Col.).

Char. subsp.— Similar to *C. c. castaneiceps* but much darker, wings and tail shorter and bill longer; male with back mummy-brown with an olivaceous cast instead of deep neutral gray (with an olivaceous wash in immature specimens); crown chestnut instead of Sanford's brown, this color darker posteriorly but reaching as far back as the crown-cap in *castaneiceps;* underparts dark mouse-gray in place of deep neutral gray; the center of the belly whitish the flanks heavily washed with olivaceous.

Apparently nearer *C. c. brunneinucha* Berl. & Stolz. of Peru, but chestnut of crown evidently more extensive and size smaller. Wing, 68; tail, 39; tarsus, 29; culmen, 15 mm.

Known only from the Tropical Zone of the Pacific coast.

Baudo, 1.

FAMILY FORMICARIIDÆ. ANTBIRDS.

(1854) **Cymbilaimus lineatus lineatus** (*Leach*).

Lanius lineatus Leach, Zool. Misc., I, 1814, p. 20 (Berbice, Br. Guiana).

Two females exhibit the narrow barring of the underparts which characterize this form.

Florencia, 1; La Morelia, 1.

(1855) **Cymbilaimus lineatus fasciatus** *Ridgw.*

Cymbilanius lineatus fasciatus Ridgw., Proc. U. S. N. M., VI, 1884, p. 404 (Los Sabalos, Nic.); Hellm., P. Z. S., 1911, p. 1157 (Condoto).

Cymbilanius lineatus Scl. & Salv., P. Z. S., 1879, p. 524 (Remedios; Neché).

Found by us only in the Tropical Zone of the Pacific coast. It is recorded from Remedios and Neché in Antioquia by Sclater, but appears to be unknown further east in Colombia. East of the Andes the Amazonian form, *C. l. lineatus*, occurs. Five males and two females agree with Panama specimens.

Nóvita, 1; Noanamá, 1; Barbacoas, 5.

(1858) **Taraba unduliger** (*Pelz.*).

Thamnophilus unduliger PELZ., Orn. Bras., 1869, p. 75 (Maribitanas).

An adult male appears to be referable to this species of which, however, I have seen no authentic specimens.

La Morelia, 1.

(1862) **Taraba transandeana transandeana** (*Scl.*).

Thamnophilus transandeanus SCL., P. Z. S., 1855, p. 18 (Guayaquil); CASS., Proc. Acad. N. S. Phila., 1860, p. 188 (Turbo).

Thamnophilus major transandeanus HELLM., P. Z. S., 1911, p. 1157 (Guineo, Rio Calima; El Tigre, R. Tamaná; La Selva, R. Jamaraya, alt. 4600 ft.).

Inhabits the Tropical Zone of the Pacific coast. I find also that two males and three females from Rio Frio, in the Cauca Valley, are to be referred to this form rather than to *granadensis* of the Bogotá region. The males have the lower tail-coverts black tipped with white, and the females are fully as dark as specimens from the coast. A male from La Manuelita, in the Cauca Valley, is less typical, the under tail-coverts being less black, their white margins broader, but it may be referred to *transandeana* rather than to *granadensis*.

The appearance of characters of humid Pacific coast forms in the specimens from the comparatively arid Cauca Valley, indicates that the characters may have been acquired before the form entered the Valley.

Alto Bonito, 7; La Vieja, Chocó, 1; Baudo, 1; San José, 3; Barbacoas, 6; Rio Frio, 5; Palmira, 1.

(1863) **Taraba transandeana granadensis** (*Cab.*).

Diallactes granadensis CAB., J. f. O., 1872, p. 234 (Bogotá).

?*Thamnophilus transandeanus* SCL. &. SALV., P. Z. S., 1879, p. 524 (Remedios; Neché).

Inhabits the Tropical Zone of the Magdalena River and also the eastern base of the Eastern Andes. Hellmayr (P. Z. S., 1911, p. 1158) has described the differences distinguishing this race from *T. t. transandeana*.

The character of "under tail-coverts cinereous with a white apical edge preceded by a distinct blackish subterminal band" holds good for four of our five males. In the fifth (from Villavicencio), the lower tail-coverts do not differ materially from those of average Pacific coast males. The bill, however, is perceptibly smaller than in true *transandeana.*

Two females (Buena Vista, 1; Villavicencio, 1) are less deeply colored above than Pacific coast females and show slightly more contrast between the tone of the cap and the color of the back.

Malena, 1; Honda, 2; Buena Vista (alt. 4500 ft.), 2; Villavicencio, 2.

(1870) **Thamnophilus unicolor** (*Scl.*).

Dysithamnus unicolor Scl., P. Z. S., 1859, p. 141 (Pallatanga, Ecuador); Scl. & Salv., P. Z. S., 1879, p. 524 (Sta. Elena).

Found by us locally in the Subtropical Zone of all three Ranges. Fourteen females and twenty-two males agree in color with specimens from western Ecuador, but in size specimens from the Bogotá region average slightly larger.

San Antonio, 11; Gallera, 4; Cerro Munchique, 2; Cocal, 2; Ricaurte. 2; Barro Blanco, 2; La Palma, 3; Fusugasugá, 5; Aguadita, 2.

(1882) **Thamnophilus nigriceps** *Scl.*

Thamnophilus nigriceps Scl., P. Z. S., 1868, p. 571; published April, 1869 (New Grenada, "Bogotá skin").

Thamnophilus virgatus Lawr., Proc. Acad. N. S. Phila., XX, 1868, p. 361; published April 27, 1869 [1] (Turbo, e. side Gulf of Darien).

Inhabits the humid Tropical Zone of northern Colombia from eastern Panama to the Magdalena River. Our series of twenty-eight specimens shows conclusively that both *T. nigriceps* and *T. virgatus* are based on the female of a species of which the male is black, and indicates that there is but one race instead of two in the area in question.

Sixteen of our specimens are adult males, nine are females, and three are young males in transition plumage from the rufous-backed, black-headed female to the black male. The latter plumage appears not to have been described. It is dull, velvety black without trace of white anywhere except on the under wing-coverts, which are white terminally margined with black, and inner margins of the wing-quills.

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[1] I am indebted to Dr. Richmond for calling my attention to the fact that the publication of that part (No. 6) of the Proceedings in which this description occurs was announced at the meeting of the Academy held April 27, 1869. (*Cf.* Proceedings, 1869, p. 13.) The last part of the Proceedings of the Zoological Society, according to the covers of the numbers of this volume for 1868, was published in March of the following year. The cover for the third part of this volume, however, bears the date "April, 1869." It does not seem probable, however, that the number, due in March, was issued after April 27, the date of publication of the description of Lawrence's *Thamnophilus virgatus*, and I therefore accept Sclater's name as, in my opinion, having priority.

In view of the strikingly different plumage of the female which has been believed to be that of the male (though Cassin recorded his two Turbo specimens as females) and the comparative rarity of males in transition plumage, it is perhaps not surprising that the male of this species has escaped recognition as such; but it would not be surprising to discover that it has been described under a different name, though I have been unable to find one.

Lawrence's type of *virgatus*, loaned me by Dr. Stone, has the white stripes on the crown and below wider than in the figure of Sclater's type (Cat. Bds. B. M., XV, pl. xii) and two specimens from the Magdalena River. We have, however, an essentially topotypical specimen of *virgatus* from the Atrato River which closely agrees with Magdalena Valley specimens, and we have also a specimen from the Magdalena Valley which in the width of the stripes agrees with others from eastern Panama. It is my belief therefore that but one race of this bird is represented by our series, and for that race, as stated above, I consider that Sclater's name has priority. In addition to the specimens listed below we have also twelve males and three females from eastern Panama (El Real, Tapaliza, etc.).

Atrato River, 2 ♂♂; Iguamiando, Chocó, 1 ♀; Algodonal, Magdalena River, 1 ♀; Puerto Berrio, 3 ♂♂, 1 ♀; Malena, 2 ♂♂, 2 ♀♀; west of Honda, 1 ♂.

(1883) **Thamnophilus punctatus punctatus** (*Shaw*).

Lanius punctatus Shaw, Genl. Zool., VII, 2, 1809, p. 327 (Cayenne).

Thamnophilus nævius Allen, Bull. A. M. N. H., XIII, 1900, p. 161 (Bonda; Minca; Cacagualito; Onaca; Santa Marta).

A pair from Barrigon, east of Villavicencio, agrees with a British Guiana series, the female having the well-defined cinnamon-rufous or hazel cap of this race. While agreeing with *atrinucha* in length of wing this form has the bill considerably smaller, the average being 17.5 mm. as compared with 19.5 mm. in specimens from the Magdalena Valley and Pacific coast.

Barrigon, 2.

(1885) **Thamnophilus punctatus atrinucha** *Salv. & Godm.*

Thamnophilus atrinucha Salv. & Godm., Biol. Cent. Am., Aves, II, 1892, p. 200 (Cen. Am.; Hellmayr "fixes" Panama).

Thamnophilus nævius CASS., Proc. Acad. N. S. Phila., 1860, p. 188 (R. Truando); SCL. & SALV., P. Z. S., 1879, p. 524 (Neché).

Thamnophilus nævius atrinucha HELLM., P. Z. S., 1911, p. 1158 (San Joaquim; Noanamá; Nóvita).

Common throughout the greater part of the Tropical Zone but not taken by us in the Cauca Valley. Specimens from the Pacific coast region are typical; those from La Frijolera show a slight approach toward the Magdalena Valley form which agrees with true *atrinucha* in size, but has the underparts in the male paler than in either *atrinucha* or *punctata*. The upperparts average less black than in *atrinucha*, while the female is intermediate in color; those from the central Magdalena (Honda, etc.) being nearer *atrinucha*, while two from the Santa Marta region approach *punctata* in their more rufescent back and more rufous cap. A third Santa Marta female agrees with *atrinucha*.

It is probable that on the basis of the characters shown by the male which, it will be observed is paler below than either of the races it stands between, the Magdalena Valley bird is separable, but I do not consider it advisable to name it without a more thorough examination of the entire group than my material permits of. This is doubtless the form which Hellmayr (Abh. Bayer. Akad. Wiss., XXII, 1906, p. 659) provisionally refers to *albiventris* Tacz. of north Peru. It does not seem probable, however, that birds from the Magdalena Valley and Peru are identical, while the form occupying the east Bogotá region, as shown above, is referable to *punctata*.

Alto Bonito, 2; Dabeiba, 6; Bagado, 3; Baudo, 2; Nóvita, 3; Nóvita Trail (3000 ft.), 1; Juntas de Tamaná, 1; Noanamá, 1; San José, 1; Barbacoas, 7; La Frijolera, 15; Malena, 1; Honda, 4; Chicoral, 1.

(1903) **Thamnophilus canadensis pulchellus** (*Cab. & Hein.*).

Hypolophus pulchellus CAB. & HEIN., Mus. Hein., II, 1859, p. 16 (Cartagena).

Thamnophilus pulchellus ALLEN, Bull. A. M. N. H., XIII, 1900, p. 161 (Bonda; Cienaga; Santa Marta).

This bird is apparently restricted to the Caribbæan coastal zone.

Turbaco (near Cartagena), 3; La Playa, 7; Calamar, 3; Algodonal, 2.

(1908) **Thamnophilus doliatus doliatus** (*Linn.*).

Lanius doliatus LINN., Syst. Nat., I, 1766, p. 136 (Guiana).

Found only in the Tropical Zone at the eastern base of the Eastern Andes. Four males average darker and have less white in the crest than eight males from Trinidad, but the differences are bridged by individual variation and this small series confirms Hellmayr's opinion (Nov. Zool., 1906, p. 30) that *T. d. fraterculus* Berl. & Hart. is not separable.

Villavicencio, 7.

(1916) **Thamnophilus radiatus albicans** *Lafr.*

Thamnophilus albicans LAFR., Rev. Zool., 1844, p. 82 ("Colombie"; I suggest Honda, alt. 600 ft.).

We found this form only in the Magdalena Valley. At the eastern base of the Eastern Andes it appears to be replaced by *T. doliatus.* The female is not barred below as stated by Sclater (Cat. Bds. B. M., XV, p. 210) but, as might be expected, closely resembles the female of *T. radiatus.*

Chicoral, 3; Honda and vicinity, 7; Puerto Berrio, 3; Malena, 4; Nare, 1.

(1917) **Thamnophilus tenuipunctatus** *Lafr.*

Thamnophilus tenuepuntatus (*sic*) LAFR., Rev. Zool., 1853, p. 339 ("Anolaima," w. slope E. Andes, alt. 4600 ft.).

I refer to this species three males and two females from Villavicencio. The females have the throat striped, the rest of the underparts distinctly barred with black and white, the black bars being somewhat narrower, the white bars wider than in the male. The upperparts are rufous-chestnut unmarked except for a slight extension of the markings of the side of the neck on to the nape. They thus resemble the females of *multistriatus* but are more heavily barred with black below.

Thamnophilus tenuifasciatus Lawr. (Ann. N. Y. Lyc., VIII, 1867, p. 468) based on a male from Napo (Type No. 43396, A. M. N. H.) is synonymized by Sclater (Cat. Bds. B. M. XV, p. 211) with *T. multistriatus.* It has, however, the cap black, unmarked, and is apparently a representative of *T. tenuipunctatus,* from which it differs in being larger (♂, wing, 75 mm. as compared with 70 mm. in *tenuipunctatus*) and in having the black bars wider and the white ones above less broken, the bands on the tail more complete. I have no specimens of *T. berlepschi* Tacz. of Peru, which appears to differ substantially from *tenuifasciatus* (*cf.* Tacz. Orn. du Perou, II, p. 24).

210

(1920) **Thamnophilus multistriatus** *Lafr.*

Thamnophilus multistriatus LAFR., Rev. Zool., 1844, p. 82 ("Colombia"; I suggest Fusugasugá, alt. 6000 ft.); WYATT, Ibis, 1871, p. 331 (Ocaña); SCL. & SALV., P. Z. S., 1879, p. 524 (Concordia; Medellin); STONE, Proc. Acad. N. S. Phila., 1899, p. 306 ("Antioquia").

This species inhabits mainly the lower parts of the Subtropical Zone of all three ranges. I can detect no racial differences in color in our series of seventeen males and fourteen females, but specimens from the Magdalena region have the tail longer.

Los Cisneros, 2; Caldas, 4; La Frijolera, 1; Las Lomitas, 2; San Antonio, 4; Cali, 4; Salencio, 2; Miraflores, 3; Salento, 1; La Candela, 2; near San Agustin, 3; Andalucia (3000 ft.), 2; Fusugasugá, 1.

(1928) **Thamnistes æquatorialis** *Scl.*

Thamnistes æquatorialis Scl., P. Z. S., 1861, p. 380 (Rio Napo).

Three specimens from La Morelia.

(1928*a*) **Thamnistes anabatinus intermedius** *Chapm.*

Thamnistes anabatinus intermedius Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 614 (Barbacoas, Col.).

Char. subsp.— Similar to *T. a. coronatus* Nels., but upperparts, wings and tail darker, the crown between russet and argus-brown instead of cinnamon-brown, and more distinctly defined from the back, the back with a russet tinge, the tail hazel rather than cinnamon-rufous.

This form, of which we have now two specimens, is clearly an intermediate between *T. æquatorialis* of eastern Ecuador and southeastern Colombia, and the quite different *T. anabatinus* group of Panama to Mexico. Being forms of the Tropical Zone the ranges of *æquatorialis* and *intermedius* are apparently separated by the Andean system, but the near relationships of *æquatorialis* and *anabatinus* are indicated by the discovery of this Colombian race. The specimen from Alto Bonito agrees with the type.

Alto Bonito, 1; Barbacoas, 1.

(1933) **Clytoctantes alixii** *Elliot.*

Clytoctantes alixii Elliot, P. Z. S., 1870, p. 242, pl. xx (Rio Napo).

An adult male and female collected by Miller and Boyle at Puerto Valdivia, are, so far as I am aware, the first specimens of this rare species to be taken by other than native collectors. The male agrees with the type, due allowance being made for the somewhat faded condition of the latter.

Puerto Valdivia, 2.

1936. **Dysithamnus semicinereus semicinereus** Scl.

Dysithamnus semicinereus Scl., P. Z. S., 1855, p. 90, pl. 97 (Bogotá); Todd, Bull. A. M. N. H., XXXV, 1916, p. 545 (part; Bogotá; La Candela; near San Agustin; Andalucia; Buena Vista).

Mr. W. E. Clyde Todd (*l. c.*) has presented us with such a careful study of the relationships of the puzzling assemblage of birds forming the *Dysithamnus mentalis* group, that I hesitate to advance conclusions differing somewhat from those reached by him after an examination of our specimens.

Whether we have one or more species in this group, I am not prepared to say, and so far as specific relationships are concerned, the names here adopted must be considered as tentative. Far more material than is now available is required before this exceptionally difficult problem can be solved. Meanwhile, I merely attempt to identify our Colombian material, using my knowledge of the faunal affinities of certain localities when the specimens from them cannot be satisfactorily referred to one form or another.

The specimens I should refer to the present race (the characters of which have been fully described by Mr. Todd) are all from the Subtropical Zone of the Eastern Andes, and eastern slope of the Central Andes. Seven specimens from Miraflores (= e. of Palmira) and two from La Frijolera, both on the western slope of the Central Andes, referred by Mr. Todd to this race, I place respectively under *D. s. extremus,* and an as yet unnamed race of *D. mentalis;* while a series from the Pacific coast of Ecuador, considered by the same author to be *semicinereus,* I believe to represent a third race distinguished by its smaller size, slight color differences in the adult male and pronounced color differences in the female and immature male.

Buena Vista, 12; La Candela, 5; near San Agustin, 1; Andalucia (5000 ft.), 1.

(1936*a*) **Dysithamnus semicinereus extremus** Todd.

Dysithamnus extremus Todd, Bull. A. M. N. H., XXXV, 1916, p. 549 (Salencio, type; near Jimenez; Pavas; La Maria; San Luis; San Antonio; Las Lomitas; Rio Frio; Salento).

Dysithamnus semicinereus Scl. & Salv., P. Z. S., 1879, p. 525 (Concordia).

Inhabits the Subtropical Zone of the Western Andes and western slope of the Central Andes, descending to the upperpart of the Tropical Zone on the western slope of the Western Andes and in the Cauca Valley.

While adult males of this race can readily be distinguished from *semicinereus,* immature males of the two forms, as Mr. Todd (*l. c.*, p. 551) has remarked, are "not distinguishable in any way. . . ."

In view of this fact, it does not seem to me to be desirable to follow Mr. Todd in referring immature males from east of Palmira (Miraflores) on the western slopes of the Central Andes to *semicinereus*. Study of our Colombian material shows that when a certain species is represented by different forms in the Eastern Andes and Western Andes, specimens from the western, or Cauca Valley slope of the Central Andes agree, as indeed might be expected, with the form from the Western Andes, while those from the eastern, or Magdalena Valley slope of the Central Andes agree with the East Andean form. Indeed, a specimen from Salento, a locality on the western slope of the Central Andes which has essentially the same avifauna as Miraflores, is typical of *extremus*. Either, therefore, we have to treat *extremus* as a full species which occurs in the same fauna as *semicinereus*, or as a representative, intergrading form. The specimens at hand unfortunately do not afford conclusive evidence of the status of the West Andean bird, but all things considered, it seems to me more probable that the Miraflores specimens are immature examples of *extremus* rather than adults of *semicinereus*.

Salencio, 3; Las Lomitas, 7; San Antonio, 7; Rio Frio, 5; Miraflores, 7; Salento, 2.

(1936*b*) **Dysithamnus mentalis** subsp.

Dysithamnus semicinereus Todd, Bull. A. M. N. H., XXXV, 1916, p. 549 (La Frijolera specimens only).

Dysithamnus mentalis lateralis Todd, Bull. A. M. N. H., XXXV, 1916, p. 541 (Honda specimens only).

A fully adult male and a female from La Frijolera, in Antioquia on the lower Cauca River, and two females from El Consuelo, above Honda, belong, in my opinion, to the same form. The male has the back olive-green clearly defined from the plumbeous of the nape and head, and the yellow of the abdomen extends well up to the breast. It therefore closely resembles specimens of *mentalis* recently taken by us in the Organ Mountains, west of Rio Janeiro.

The female has the underparts much clearer and stronger yellow than any bird in a series of some twenty specimens of *semicinereus* and *extremus*, and in this respect agrees essentially with two females of *D. mentalis lateralis* Todd, from northeastern Venezuela.

The two females from El Consuelo, near Honda, have been referred by Mr. Todd to his *D. m. lateralis*, but there can be no doubt that they belong to the same form as the birds from La Frijolera. This, as the male from that locality shows, is not *lateralis*, but is nearer true *mentalis*. In my opinion, these four birds represent an as yet unnamed race, which occupies the lower Cauca-Magdalena humid fauna. I should, however, prefer to see more material before committing myself definitely on this subject, but I feel that when the range and relationships in Colombia of the forms of this group are satisfactorily determined, we shall have one race in the humid lower Cauca-Magdalena Fauna of the Tropical Zone, one in the East Andean Subtropical Fauna, and a third in the West Andean Subtropical Fauna which ranges downward to the upperpart of the Tropical Zone.

La Frijolera, 2; El Consuelo, above Honda, 2.

(1943) **Dysithamnus puncticeps flemmingi** *Hart.*

Dysithamnus flemmingi Hart., Bull. B. O. C., XI, 1900, p. 38 (Rio Verde, Ecuador).

Three males and three females from Barbacoas are to be referred to this form which is obviously a representative of *D. p. puncticeps.* Of two males from central western Colombia, as stated below, one is nearer to *puncticeps* the other to *flemmingi.*

Barbacoas, 6.

(1943*a*) **Dysithamnus puncticeps puncticeps** *Salv.*

Dysithamnus puncticeps Salv., P. Z. S., 1866, p. 72 (Veragua).

Ten specimens from the Atrato and upper San Juan are intermediate between *puncticeps* and *flemmingi.* Some are nearer one, some the other, but as a whole, the series is referable to the Panama race.

Baudo, 1; La Vieja, 1; Nóvita, 1; Alto Bonito, 6; Puerto Valdivia, 1.

(1944) **Dysithamnus leucostictus** *Scl.*

Dysithamnus leucostictus Scl., P. Z. S., 1858, p. 66, pl. cxl, ♀ ad. (R. Napo, Ec.); Tacz. & Berl., *Ibid.* 1885, p. 99, ♂.

Two females from Buena Vista agree essentially with Sclater's plate and description. Although these birds were taken in the heart of the east Bogotá region, this species does not appear to have been before recorded from Colombia.

Buena Vista, 2.

(1951) **Dysithamnus capitalis capitalis** *Scl.*

Dysithamnus capitalis Scl., P. Z. S., 1858, p. 65 (Rio Napo).

Found by us only in Amazonian Colombia. I have no material for comparison. As before stated, I have followed Brabourne and Chubb, in their allottment to genera of certain Formicarian birds, pending a thorough revision of the groups concerned, based on adequate material of the known species. The present species, for example, is obviously not referable to *Dysithamnus*, but in most cases the purposes of this paper, are, in my opinion, best served by using the nomenclature of a standard Check-List rather than by the expression of individual opinion based on only a partial survey of the field.

La Morelia, 2; Florencia, 1.

(1953) **Dysithamnus ardesiacus ardesiacus** *Scl.*

Dysithamnus ardesiacus Scl. & Salv., P. Z. S., 1867, p. 756 (Rio Napo).

Found in the Tropical Zone of Amazonian Colombia. Our specimens differ from lower Orinoco and British Guiana specimens of *D. a. saturinus* in the smaller amount of black on the throat of the male.

La Morelia, 4; Florencia, 3.

(1959) **Thamnomanes glaucus** *Cab.*

Thamnomanes glaucus Cab., Arch. für. Naturg. 1847, p. 230 (Cayenne).

Found in the Tropical Zone of Amazonian Colombia. Four males are slightly darker than recently collected specimens from British Guiana.

La Morelia, 5; Florencia, 1.

(1961) **Myrmotherula pygmæa** (*Gmel.*).

Muscicapa pygmœa Gmel., Syst. Nat. I, 1789, p. 933 (Cayenne).

Myrmotherula pygmœa Cass., Proc. Acad. N. S. Phila., 1860, p. 190 (R. Truando).

We have specimens of this wide-ranging species from the Tropical Zone of the Pacific coast and from Amazonian Colombia. They agree with others from British Guiana.

San José, 1; Florencia, 1; La Morelia, 1.

(1963) **Myrmotherula surinamensis pacifica** *Hellm.*

Myrmotherula surinamensis pacifica Hellm., P. Z. S., 1911, p. 1159 (Type from Buenaventura; also specimens from Rio Calima; Sipi; near Naranjo, 2800 ft.).

Myrmotherula surinamensis Cass., Proc. Acad. N. S. Phila., 1860, p. 190 (Turbo); Scl. & Salv., P. Z. S., 1879, p. 525 (Remedios).

Inhabits the Tropical Zone of the Pacific coast and eastward to the Magdalena. Comparison of our specimens from this region with a recently collected series from British Guiana confirm the characters ascribed to it by Hellmayr (*l. c.*).

Alto Bonito, 4; Dabeiba, 7; Quibdó, 2; Nóvita, 2; Nóvita Trail (2000 ft.), 1; Juntas de Tamaná, 1; Noanamá, 3; Buenaventura, 6; Los Cisneros, 5; Tumaco, 4; Barbacoas, 2; Puerto Valdivia, 3; Malena, 1.

(1972) **Myrmopagis fulviventris** (*Lawr.*).

Myrmotherula fulviventris Lawr., Ann. Lyc. N. H. N. Y., VII, 1862, p. 468 (Panama); Wyatt, Ibis, 1871, p. 531 (Naranjo); Scl. & Salv., P. Z. S., 1879, p. 525 (Remedios).

Myrmotherula ornata Cass., Proc. Acad. N. S. Phila., 1860, p. 191 (R. Truando).

Myrmotherula viduata Hart., Nov. Zool., 1898, p. 492 (Cachabi, n. w. Ecuador).

Myrmotherula fulviventris viduata Hellm., P. Z. S., 1911, p. 1162 (El Tigre; Nóvita; Noanamá).

Inhabits the Tropical Zone of the Pacific coast, the eastern slope of the Western Andes and west slope of the Central Andes. Fifteen specimens (6 males, 9 females) from this region agree with eight (6 males, 2 females) from Ecuador. Hellmayr (*l. c.*) has already alluded to this resemblance between western Colombia and western Ecuador birds. I am, however, unable to separate them from true *fulviventris* of which I have seen seven (3 males, 4 females) Panama specimens, including the type.

Alto Bonito, 3; Juntas de Tamaná, 4; Barbacoas, 3; Puerto Valdivia, 4; La Frijolera, 1; Miraflores, Cen. Andes, 1 ♀; Salencio, Nóvita Trail, e. slope, 1.

(1975) **Myrmopagis hæmatonota** (*Scl.*).

Formicivora hæmatonota Scl., P. Z. S., 1857, p. 48 (Chamicuros).

An adult male from La Morelia agrees with others from the Orinoco.

(1977) **Myrmopagis ornata ornata** (*Scl.*).

Formicivora ornata Scl., Rev. Zool., 1853, p. 480. (New Grenada).

Our four specimens were taken at Buena Vista at the upper limit of the Tropical Zone in the Eastern Andes. They are doubtless topotypical.

Buena Vista, 4.

(1984) **Myrmopagis axillaris melæna** (*Scl.*).

Formicivora melæna Scl., P. Z. S., 1857, p. 130 (Bogotá).

Our specimens from the eastern Andes agree on the whole with a 'Bogotá' skin. This form is intermediate between the gray *M. a. axillaris* of Guiana, etc., and the black *M. a. albigula* (Lawr.) of the Pacific coast.

Florencia, 6; La Morelia, 2.

(1984*a*) **Myrmopagis axillaris albigula** (*Lawr.*).

Myrmotherula albigula Lawr., Ann. Lyc. Nat. Hist. N. Y., VIII, 1867, p. 131. Types Nos. 43401 and 43402, Am. Mus. Nat. Hist., females, Panama R. R. line; McLeannan and Galbraith.

Myrmotherula axillaris melæna Hellm., P. Z. S., 1911, p. 1162 (Nóvita).

Myrmotherula melæna Cass., Proc. Acad. N. S. Phila., 1860, p. 191 (R. Truando); Scl. & Salv., P. Z. S., 1879, p. 525 (Neché).

Inhabits the Tropical Zone of the Pacific coast of Colombia and Ecuador and extends northward to Honduras and eastward into Antioquia.

This form is characterized by excessive blackness. In the adult male the black areas are shining jet black instead of slate-black as in *melæna* (Scl.). This character is well shown by two Panama males, seven from western Colombia and nine from western Ecuador.

Lawrence's inappropriate name of *albigula,* based on two females from Panama, now in the American Museum, is obviously available for this race.

Seven males from Trinidad represent the extreme of grayness and are materially lighter than six males from the Potaro River, British Guiana.

Alto Bonito, 3; Dabeiba, 1; Baudo, 1; Juntas de Tamaná, 1; Nóvita, 1; San José, 2; Barbacoas, 2; Puerto Valdivia, 1.

(1985) **Myrmopagis schisticolor schisticolor** (*Lawr.*).

Formicivora schisticolor Lawr., Ann. Lyc. N. Y., VIII, 1867, p. 172 (Costa Rica).

Myrmotherula schisticolor schisticolor Hellm., P. Z. S., 1911, p. 1163 (Rio Siató).

Inhabits chiefly the Subtropical Zone of the Western Andes and western slope of the Central Andes ranging southward to southwestern Ecuador and northward to Guatemala.

Alto Bonito, 1; La Frijolera, 3; Las Lomitas, 2; San Antonio, 3; Ricaurte, 1; Miraflores, 3.

(1985*a*) **Myrmopagis schisticolor interior** *Chapm.*

Myrmopagis schisticolor interior Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 614 (Buena Vista, Col.).

Char. subsp.— Male like the male of *M. s. schisticolor* (Lawr.), female very different from the female of that race, the back slate-gray, not brownish or buffy olive, the crown grayer, the tail and wings grayish margined externally with olivaceous instead of russet; size somewhat larger.

Common in the Subtropical Zone of the eastern slope of the Central Andes and of both slopes of the Eastern Andes in Colombia, and eastward through the Tropical Zone to the Orinoco.

La Palma, 2; La Candela, 4; Aguadita, 1; Buena Vista, 12; La Morelia, 1.

(1993*a*) **Myrmopagis cinereiventris pallida** (*Berl. & Hart.*).

Myrmotherula cinereiventris pallida Berl. & Hart., Nov. Zool., IX, 1902, p. 74 (Nericagua, Ven.)

Comparison with British Guiana specimens shows that a male from La Morelia possesses the characters on which this race is based.

La Morelia, 1.

(2006) **Herpsilochmus rufomarginatus frater** *Scl. & Salv.*

Herpsilochmus frater Scl. & Salv., P. Z. S., 1880, p. 159 (Sarayacu, Ecuador).

Buena Vista, 1 ad. ♂.

2013 (part) **Microrhopias grisea intermedia** (*Cab.*).

F[ormicivora] intermedia Cab., Arch. für Naturg., 1847, I, p. 225 (Cartagena); Wyatt, Ibis, 1871, p. 331 (Bucaramanga).

Formicivora grisea Cass., Proc. Acad. N. S. Phila., 1860, p. 190 (Carthagena).

Microrhopias grisea hondæ Chapm., Bull. A. M. N. H., XXIII, 1914, p. 616 (Chicoral, Col.).

Known from the arid coastal zone at Cartagena and eastward to the Magdalena, and up the Magdalena Valley to its head.

Assuming that our large series (18 males, 29 females) from near Santa Marta represented *intermedia,* I described the Upper Magdalena Valley bird as new on the basis of the striking difference between the females from these regions, those from Santa Marta having the breast conspicuously streaked with black, while the upper Magdalena female has the underparts whitish more or less washed with buffy and wholly without spots.

Now, however, Miller and Boyle send four females and a male from La Playa, near the mouth of the Magdalena, which are inseparable from the Upper Magdalena birds to which I have applied the name *hondæ;* that is, the females are unspotted below, and the male has the tail more narrowly tipped with white than in the Santa Marta and Venezuela male. I still lack topotypes of *intermedia,* but there is small probability of there being any difference between La Playa and Cartagena birds. In any event, it is far from likely that specimens from Cartagena would resemble those from Santa Marta rather than those from the intervening locality of La Playa.

It is true that Cabanis describes the female of *intermedia* as having the breast spotted, but since he had a specimen or specimens from Venezuela as well as Cartagena it is possible he may have described a female from Venezuela under the belief that it belonged to the same species as that found at Cartagena. However this may be, his name is applicable only to the Cartagena form, which in view of our recently acquired specimens from La Playa, I believe to belong to the species in which the female has no spots on the breast. It therefore most nearly resembles true *grisea* of the Guianas in which the female is more washed with ochraceous-rufous below than in *intermedia,* but, like the latter, is without spots on the underparts.

Apparently these two forms are entirely cut off from each other by others in which the female is conspicuously spotted below. The Orinoco form is *orenocensis* of Hellmayr, and seems to be specifically distinct. The form occupying the Caribbean coast region from Santa Marta to northeastern Venezuela, to which the name *intermedia* has been commonly applied, should apparently bear the name of *cano-fumosa* Cherrie. I have not seen Cherrie's type, but in describing *cano-fumosa* (Bull. Bklyn. Inst. Arts & Sciences, 1909, p. 388) from Las Barrancas on the lower Orinoco, this author remarks: "Specimens in the American Museum collection from Santa Marta, Colombia, San Antonio and Cumanacoa, Bermudez, Venezuela, all seem to belong to this form." Hellmayr and Seilern (Archiv. für Naturg. 1912, p. 126) also share this view, though they fall into the common error of using the name *intermedia* for the species in which the female has the breast streaked.

The specimens in our museum, including thirty-four females of *cano-fumosa* from Bonda, Santa Marta; Puerto Cabello, San Antonio, and Cristobal Colon, Venezuela, and six males and six females of *orenocensis* from Maripa on the Orinoco, lead me to believe that these forms are specifically distinct from each other and from *grisea* on the east and *intermedia* on the west. The two latter, although most closely related of any in the group, would therefore be separated by a wide area occupied with representative but not intergrading races. The case is an exceptionally interesting one and deserves a study which neither my time nor material will permit me to give it.

La Playa, 1♂, 4 ♀♀; Calamar, 2 ♂♂; Honda, 8 ♂♂, 4 ♀♀; Chicoral, 5 ♂♂, 3 ♀♀.

(2026) **Microrhopias boucardi consobrina** (*Scl.*).

Formicivora consobrina Scl., P. Z. S., 1860, p. 279 (Babahoyo, s. w. Ecuador); Scl. & Salv., P. Z. S., 1879, p. 525 (Pocune).

Formicivora quixensis Cass., Proc. Acad. N. S. Phila., 1860, p. 190 (R. Truando).

Formicivora quixensis consobrina Hellm., P. Z. S., 1911, p. 1163 (Bahia del Choco; Nóvita; Sipi).

Inhabits the Tropical Zone of the Pacific Coast and Antioquia. Colombia specimens agree with those from Ecuador and differ from those from Panama and northward in the broader white tips to the rectrices and deeper color of the female.

Alto Bonito, 2; Nóvita, 2; San José, 3; Puerto Valdivia, 2.

(2021) **Drymophila caudata caudata** (*Scl.*).

Formicivora caudata Scl., P. Z. S., 1854, p. 254, pl. 74 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 524 (Sta. Elena).

Drymophila caudata striaticeps Chapm., Bull. A. M. N. H., XXXI, 1912, p. 145 (Salento, Cen. Andes, Col.).

Found by us in the Subtropical Zone of the Western and Central Andes. We did not secure it in the Bogotá region. In the absence of topotypical specimens I was led to believe, both by Sclater's original description and plate (*l. c.*), as well as by his description in the British Museum Catalogue (XV, p. 253), in which it is said the "centre of the cap is black," that true *caudata* had the cap black and, consequently, that Santa Marta males, in which the cap is black represented this form. Hence the birds from western Colombia with a striped crown were described under the name *striaticeps* (*l. c.*).

Hellmayr, however, writes me that the type, as well as other Bogotá specimens which he has examined, have the crown striped, and are not separable from Ecuadorian specimens. It follows, therefore, that *striaticeps* becomes a synonym of *caudata*, from which the black-crowned Santa Marta bird is separable.[1]

Las Lomitas, 1; Cocal, 3; Gallera, 2; Salento, 2; Sta. Elena, 4; El Eden, 1.

(2036) **Terenura callinota** (*Scl.*).

Formicivora callinota Scl., P. Z. S., 1855, p. 89, pl. xcvi ('Bogotá').

Two females from Aguadita in the Subtropical Zone above Fusugasugá.

Aguadita, 2.

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[1] Since the above was written the Santa Marta race has been described as *Drymophila caudata hellmayri* Todd (Proc. Biol. Soc. Wash , 1915, p. 80).

(2043) **Ramphocænus melanurus trinitatis** *Less.*

Ramphocænus trinitatis Less., Rev. Zool., 1839, p. 42 (Trinidad).

A female from Buena Vista agrees with Trinidad specimens.

Buena Vista, 1.

(2047*a*) **Ramphocænus rufiventris griseodorsalis** *Chapm.*

Ramphocænus rufiventris griseodorsalis Chapm., Bull. A. M. N. H., XXXI, 1912, p. 145 (Miraflores, Col.).

Ramphocænus rufiventris Scl. & Salv., P. Z. S., 1879, p. 525 (Sta. Elena).

Char. subsp.— Similar to *Ramphocænus rufiventris rufiventris* Bp., but with the back slaty smoke-gray, the head less rufous gray, slightly tinged with cinnamon, which is stronger, more ochraceous on the forehead; sides of the head less strongly ochraceous-buff; but ochraceous-buff of underparts, particularly of abdomen, deeper.

Known only from the northern end of the Western Andes, and Subtropical Zone of the Central Andes.

Dabeiba, 1; Miraflores, 1; Salento, 1.

(2048) **Microbates cinereiventris cinereiventris** (*Scl.*).

Ramphocænus cinereiventris Scl., P. Z. S., 1855, p. 76, pl. lxxxvii (Pasto, Col.); *Ramphocænus cinereiventris cinereiventris* Hellm., P. Z. S., 1911, p. 1164 (Nóvita; Sipi; Rio Colima; Buenaventura).

Probably restricted to the Tropical Zone of the Pacific coast of Colombia. The Antioquian form east of the Western Andes is doubtless *M. c. magdalenæ*. Hellmayr (*l. c.*) has called attention to the obvious error in the alleged type-locality. It is probable that Pasto, whence the type is said to have come, is, in a limited way, the 'Bogotá' of southern Colombia. In other words, as the commercial center of that part of Colombia, it is the shipping point for the products of the surrounding country. Consequently the specimens recorded below from Barbacoas on the trail from the coast to Pasto, may doubtless be considered as topotypical.

Alto Bonito, 1; Juntas de Tamaná, 2; Nóvita, 1; Buenaventura, 1; San José, 1; Barbacoas, 4; Buenavista, Nariño, 1.

(2048*a*) **Microbates cinereiventris magdalenæ** *Chapm.*

Microbates cinereiventris magdalenæ Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 642 (Puerto Berrio, Col.).

Char. subsp.— Differing from both *M. c. cinereiventris* and *M. c. torquatus* in having the tail tipped with whitish, the color both above and below paler, the tail and particularly bill, longer; differs from *cinereiventris*, its nearest geographic ally, and agrees with *torquatus* in having no postocular spot. Wing, 55; tail, 30; tarsus, 24; culmen, 21.5 mm.

Known only from the type-locality in the Magdalena Valley.

(2049) **Microbates collaris** (*Pelz.*).

Rhamphocœnus collaris Pelz., Orn. Bras., 1869, p. 84 (Marabitanas).

A female from Florencia adds this species to the avifauna of Colombia.
Florencia, 1.

(2051) **Cercomacra sclateri** *Hellm.*

Cercomacra sclateri Hellm., Nov. Zool., 1905, p. 288 (Chyavetas, e. Peru).

I refer to this species, of which I have seen no authentic specimens, a pair of birds from Florencia and a male from an altitude of 2000 ft., on the mountain slopes above Florencia.

Florencia, 3.

(2053) **Cercomacra tyrannina tyrannina** (*Scl.*).

Pyriglena tyrannina Scl., P. Z. S., 1855, pl. xcviii, p. 90 (Bogotá).
Cercomacra tyrannina rufiventris Hellm., P. Z. S., 1911, p. 1165 (Boca de Calima; Rio Calima; Nóvita; Pueblo Rico).

Inhabits the Tropical Zone of the greater part of Colombia.

After a study of some thirty-four males and thirty-four females, including topotypical series of *tyrannina* and *crepera,* I follow Ridgway (Bull. U. S. N. M., 50, V, p. 95) in referring central and eastern Panama and Colombian specimens to *tyrannina.* Cauca Valley specimens agree exactly with those from the Bogotá region, but males from southwestern Colombia and western Ecuador average darker than true *tyrannina* but, on the whole, are nearer to that form than to the blacker *crepera.* Females from Panama, southwestern Colombia, and western Ecuador agree in the color of the underparts and average deeper rufous than *tyrannina* but not so deep as *crepera.* Above, however, they agree with the former rather than the latter, *crepera* having the back and particularly tail, often with a rufescent suffusion wanting in *tyrannina.*

Barbacoas, 1 male, 3 females; Puerto Valdivia, 5; La Frijolera, 3; Salencio, 1 male; Rio Frio, 1 male; Miraflores, 2 males; near Honda, 1 female; Buena Vista, 6 males, 3 females; Villavicencio, 3 males, 2 females.

(2058) **Cercomacra nigricans** *Scl.*

Cercomacra nigricans Scl., P. Z. S., 1858, p. 245 (Santa Marta); Scl. & Salv., P. Z. S., 1879, p. 526 (Remedios); Hellmayr, *Ibid.*, 1911, p. 1166, (mouth of Calima, Rio San Juan).

Apparently inhabits the entire Tropical Zone of Colombia except the arid coastal region from which it was described. Immature birds of both sexes are slaty-gray washed with olivaceous above with a concealed white dorsal patch; less olivaceous below with the throat and center of the breast and abdomen streaked and margined with white. The adult female is clearer and darker slate above, the underparts are much blacker and the white markings are confined mainly to the throat. The adult male is jet black above and below with no white marks on the body other than the dorsal patch.

Cali, 2; Rio Frio, 3; Algodonal (lower Magdalena), 2; Banco, 1; Nare, 1; Puerto Berrio, 3; Malena, 5; Honda, 4; Chicoral, 2; Buena Vista, 1; Villavicencio, 3.

(2061) **Cercomacra berlepschi** (*Hart.*).

Pyriglena berlepschi Hart., Bull. B. O. C., VII, 1898, p. xxix (♂ ad. Cachabi, n. w. Ecuador).
Thamnophilus cachabiensis Hart., *l. c.*, p. xxix (♀ Cachabi, n. w. Ecuador).
Cercomacra berlepschi Hellm., P. Z. S., 1911, p. 1167 (near Sipi, San Joaquim).

Apparently restricted to the Tropical Zone of the Pacific coast. Of our ten specimens six sexed as "male," are wholly black, save for the concealed dorsal patch, while the four sexed as "female" have also the throat and breast and, to a lesser degree, the wing-coverts spotted with white.

Bagado, 1; Baudo, 1; Nóvita, 1; San José, 1; Barbacoas, 5; Buenavista, Nariño, 1.

(2063*a*) **Pyriglena picea** *Cab.*

Pyriglena picea Cab., Arch. für Naturg., XIII, 1847 (pt. 1), p. 212.

We have taken this species only at the head of the Magdalena Valley. Our specimens agree with one from Bolivia.

La Candela, 12; Anolaima (3000-5000 ft.), 4.

(2071) **Anoplops bicolor æquatorialis** (*Hellm.*).

Pithys bicolor æquatorialis Hellm., Orn. Monats., X, 1902, p. 33 (Lita, n. w. Ecuador).

Six specimens from southwestern Colombia are typical of this Ecuadorian form (compared with 16 specimens from Ecuador) and in their bright rufous crown show no indication of intergrading with *A. b. daguæ.*

Barbacoas, 5; Buenavista, Nariño, 1.

(2072) **Anoplops bicolor daguæ** (*Hellm.*).

Gymnopithys bicolor daguæ HELLM., Bull. B. O. C., XVI, 1906, p. 83 (near Buenaventura, Col.).

Anoplops bicolor daguæ HELLM., P. Z. S., 1911, p. 1170 (Nóvita; Juntas de Tamaná).

Restricted to the Tropical Zone of the Pacific coast and thus far known only from Buenaventura northward to the head of the Atrato. Specimens from Barbacoas, as above recorded, are typical of *æquatorialis,* while those from the lower Atrato are referable to *A. b. bicolor.*

Bagado, 1; La Vieja, 1; Baudo, 1; Nóvita, 4; Noanamá, 1.

(2072*a*) **Anoplops bicolor bicolor** (*Lawr.*).

Pithys bicolor LAWR., Ann. Lyc. N. H. N. Y., VII, 1862, p. 484 (Lion Hill, Panama).

Specimens from both sides of the lower Atrato, in comparison with Lawrence's type, are clearly referable to *bicolor* rather than to *daguæ.* No less than three well-marked forms of this species are therefore found in the Tropical Zone of the Pacific coast. Their characters are clearly defined by Hellmayr (P. Z. S. 1911, p. 1171).

Rio Salaqui, 1; Alto Bonito, 3.

(2084) **Myrmeciza melanoceps** (*Spix*).

Thamnophilus melanoceps SPIX, Av. Bras., II, 1825, p. 28, pl. xxxix, fig. 1 ("in Sylvis Paræ").

Three males and three females from Amazonian Colombia agree with descriptions of this species, of which I have seen no authentic specimens. The species appears not to have been previously recorded from Colombia.

Florencia, 5; La Morelia, 1.

(2091) **Myrmeciza maculifer maculifer** (*Hellm.*).

Myrmelastes exsul maculifer HELLM., Nov. Zool., XIII, 1906, p. 340 (Paramba, n. w. Ecuador); P. Z. S. 1911, p. 1169 (Sipi; Rio Cajon; Nóvita; Noanamá).

This appears to be a very common bird in the humid Tropical Zone of the Pacific coast of Ecuador and Colombia from at least Naranjo, Prov. Guayas, north to Bagado at the head of the Atrato. Further north, both males and females are paler below and less rufescent above than Ecuador specimens, and thus establish the validity of *Myrmeciza maculifer cassini* (see also remarks under that race).

While *Myrmelastes exsul,* of the Canal Zone and northward, is obviously the representative of *maculifer,* existing material (including a large series from eastern Panama) indicates the non-intergradation of these birds, and this view is supported by the fact that *M. m. cassini,* the most northern form of *maculifer* is, in general coloration, further from *exsul* than is true *maculifer* of Ecuador. Of the latter form I have twenty specimens (15 males, 5 females) from Ecuador.

Bagado, 1; Baudo, 1; Nóvita, 6; Juntas de Tamaná, 7; San José, 4; Los Cisneros, 6; Barbacoas, 6; Buenavista, Nariño, 1.

(2091*a*) **Myrmeciza maculifer cassini** (*Ridgw.*).

Myrmelastes cassini Ridgw., Proc. Biol. Soc. Wash., XXI, 1908, p. 194 (Turbo, Col.).

Myrmeciza exsul Cass., Proc. Acad. N. S. Phila., 1860, p. 190 (Turbo); Scl. & Salv., P. Z. S. 1879, p. 526 (Neché).

Inhabits the Tropical Zone of the lower Atrato eastward through Antioquia to the Magdalena and northward to eastern Panama.

With a large series (sixty-six males, twenty-eight females) before me I find no difficulty in separating birds from western Ecuador and southwestern Colombia (Barbacoas) from those from the northern end of the range of this species (Puerto Valdivia and Rio Salaqui, Col., El Real and Tapaliza, eastern Panama). The latter are decidedly paler; the male has the back and flanks more olivaceous less intensely rufescent, the head and underparts paler gray, the throat less blackish and usually clearly demarked from the gray breast. The differences in the female are similar in character but are less pronounced.

Intergradation between these extremes is absolute and intermediate specimens occur in so large a part of the intervening area, that it is wholly impossible to assign definite geographic boundaries to the range of either form. Specimens fairly topotypical of *maculifer* and others which might with equal truth be referred to *cassini* are found at the same locality, but, on the whole, the former may be said to be the prevailing form as far north as the upper Atrato, while beyond this *cassini* occurs.

Our eastern Panama specimens show no sign of intergradation with *M. exsul exsul* of the Canal Zone and westward.

Rio Salaqui, 2; Alto Bonito, 9; Dabeiba, 1; Puerto Valdivia, 7; Malena, 1.

(2091*b*) **Myrmeciza immaculatus immaculatus** (*Lafr.*).

T[hamnophilus] immaculatus LAFR., Rev. Zool., 1845, p. 340, (Bogotá).

Found by us in the Tropical Zone of the Magdalena Valley, at Miraflores, above Palmira in the Central Andes and at La Frijolera on the lower Cauca. Two females from the last-named locality are typical of *immaculatus* while three males from Alto Bonito on the western slope of the same range are referable to *berlepschi*. It may be distinguished from the Pacific coast race (*M. i. berlepschi*) by the comparatively small amount of white in the lesser wing-coverts of both sexes and by the duller, grayer underparts of the females.

La Frijolera, 2; Miraflores, 1 ad. ♀; Fusugasugá, 1; Honda, 3; El Consuelo (above Honda, 3200 ft.), 3.

72b

(2091*c*) **Myrmeciza immaculatus berlepschi** *Ridgw.*

Myrmeciza berlepschi RIDGW., Proc. Biol. Soc. Wash., XXII, 1909, p. 74 (Chimbo, w. Ecuador); BANGS, *Ibid.* 1910, p. 73 (Palmar; Paras; La Maria, Col.)

Myrmelastes immaculatus immaculatus HELLM., P. Z. S., 1911, p. 1168 (Pueblo Rico; Primavera).

Comparison of fourteen males and eleven females from the Pacific Tropical Zone of Colombia with four males and seven females from western Ecuador (Rio d'Oro, Naranjo, Santa Rosa) shows that birds from western Colombia and western Ecuador agree. From true *immaculatus* they may be distinguished by the larger amount of white in the lesser coverts and by the deeper, more richly colored underparts of the female. *M. i. zeledoni* of Costa Rica, of which I have only a pair of adults, appears to agree with *immaculatus* in the amount of white in the lesser coverts, but in the coloration of the underparts of the female, it resembles *berlepschi*.

Alto Bonito, 3; Bagado, 1; Baudo, 2; Nóvita, 5; Novita Trail (3500 ft.), 1; Salencio, 1; San José, 5; Las Lomitas, 1; Barbacoas, 6; Buenavista, Nariño, 1.

(2107) **Myrmeciza longipes boucardi** *Berl.*

Myrmeciza boucardi BERL., Ibis, 1888, p. 129 (Bogotá).

This race appears to be restricted to the Tropical Zone of the upper Magdalena Valley. The males have the crown and nape with little or no rufous and are thereby easily distinguished from *M. l. panamensis,* which extends from the Caribbean coast of Colombia at least as far up the Magdalena as Algodonal.

Vicinity of Honda, 9; El Consuelo (alt. 3300 ft.) above Honda, 1; Chicoral, 1; Andalucia (5000 ft.), 1.

(2107*a*) **Myrmeciza longipes panamensis** *Ridgw.*

Myrmeciza boucardi panamensis Ridgw., Proc. Biol. Soc. Wash., XXI, 1908, p. 144 (line Panama R. R.).

Myrmeciza boucardi Allen, Bull. A. M. N. H., XIII, 1900, p. 160 (Bonda; Cacagualito).

The capture of a typical male of this form at Algodonal on the Magdalena River is especially interesting as indicating how far up the river the coastal fauna extends.

Algodonal, 1.

(2108) **Myrmeciza læmosticta nigricauda** *Salv. & Godm.*

Myrmeciza nigricauda Salv. & Godm., Biol. Cent. Am., II, 1892, p. 230 (Intac, Ecuador).

An evidently not common inhabitant of the Tropical Zone of the Pacific coast which, in slightly modified form, extends in to Antioquia. The Buenavista, Nariño, female may be considered as topotypical, and two females from San José essentially agree with it. A female from Puerto Valdivia has the marks on the throat whiter and, with three males from the same locality, the tail more rufous. These four birds thus approach specimens from eastern Panama. I have, however, seen no authentic specimens of *læmosticta,* and if the eastern Panama specimens should prove to represent an undescribed form, doubtless it would be desirable to refer the Puerto Valdivia specimens to it rather than to *nigricauda.*

San José, 2; Buenavista, 1; Puerto Valdivia, 4.

(2092) **Gymnocichla nudiceps sanctæ-martæ** *Ridgw.*

Gymnocichla nudiceps sanctæ-martæ Ridgw., Proc. Biol. Soc. Wash., 1908, p. 194 (Santa Marta).

A female from Nare, near Puerto Berrio on the Magdalena, is doubtless to be referred to this form. It is decidedly less rufescent, more olivaceous above than a Panama female.

Nare, 1.

(2104) **Dichrozona cinctus** (*Pelz.*).

Cyphorhinus cinctus Pelz., Orn. Bras., 1868, p. 47 (S. Joaquim, Borba).
Dichrozona zononota Ridg., Proc. U. S. N. M., X, 1887, p. 524 (Santarem, Brazil; type examined).

A pair from Florencia and a female from La Morelia add this species to the fauna of Colombia. The male agrees with the type of *Dichrozona zononota* Ridgw. of Santarem, but is much deeper above (cinnamon-brown rather than dark ochraceous-tawny or buckthorn-brown), the flanks are grayer and the breast less heavily spotted. The females have the crown and back essentially the same shade as the male and are consequently also darker above than the Santarem bird.

Florencia, 2; La Morelia, 1.

(2121) **Hypocnemis cantator peruviana** *Tacz.*

Hypocnemis peruvianus Tacz., Orn. Perou, II, 1884, p. 61 (Chamicuros, Peru).

Inhabits the Tropical Zone of Amazonian Colombia. I have no Peruvian specimens but our birds are much nearer six specimens from Zamora, southeastern Ecuador, than they are to twenty-three recently collected examples from the Potaro River, British Guiana. The difference is particularly marked in the females, true *cantator* apparently never having pronounced dorsal stripes in this sex, while the female of *peruviana* (as it is represented by our Colombian and Ecuadorian series) is never without them. The same comment holds good of our males of *peruviana*, but several of the Guiana birds show well-marked dorsal streaks.

La Morelia, 4.

(2124) **Hypocnemis hypoxantha** *Scl.*

Hypocnemis hypoxantha Scl., P. Z. S., 1868, p. 573, pl. xliii (Upper Amazons).

A female from La Morelia agrees with Sclater's plate of this species (P. Z. S., 1868, pl. xliii) which appears not to have been previously recorded from Colombia.

La Morelia, 1.

(2129) **Myrmoborus leucophrys leucophrys** (*Tsch.*).

Pithys leucophrys Tsch., Fauna Peruana, 1845, 6, p. 176, pl. xi, fig. 2 ("Fluss Tullumayo").

Inhabits the Tropical Zone at the eastern base of the Eastern Andes. There is much variation in the width of the frontal band of the male and in the intensity of color in the female, but on the whole I can see no racial differences in our series of thirty-five specimens, including examples from Bolivia, eastern Ecuador, and the upper and lower Orinoco. A specimen from the delta of the Orinoco has the frontal band narrow, but no narrower than in one from Villavicencio. I have seen no British Guiana specimens.

Buena Vista, 5; Villavicencio, 7; La Morelia, 3.

(2131*a*) **Myrmoborus myiotherinus elegans** (*Scl.*).

Hypocnemis elegans Scl., P. Z. S., 1857, p. 47 (Bogotá).

Found by us only in the Tropical Zone of Amazonian Colombia. Our females agree with an old 'Bogotá' skin. I have seen no topotypical specimens of *M. m. myiotherinus.*

La Morelia, 4; Florencia, 4.

2128. **Hylophylax lepidonata** (*Scl. & Salv.*).

Hypocnemis lepidonota Scl. & Salv., P. Z. S., 1880, p. 160 (Sarayacu).

Inhabits the Tropical Zone of Amazonian Colombia. One of our two females is brighter, the other agrees with two essentially topotypical females from Zamora, Ecuador.

La Morelia, 3.

(2143) **Hylophylax nævia theresæ** (*Des Murs*).

Conopophaga theresæ Des Murs, Voy. Cast., Ois., 1855, p. 51, pl. xvi, fig. 2 (Rio Javari).

Found by us only in the Tropical Zone of Amazonian Colombia. Two males differ from two others from La Union on the Lower Orinoco, in having the head grayer, the lores black, instead of white, and the throat solid black instead of white or black marked with white.

La Morelia, 7.

(2146) **Hylophylax nævioides** (*Lafr.*).

Conopophaga nævioides Lafr., Rev. Zool., 1847, p. 69 (no locality; Hellmayr proposes Panama).

Hypocnemis nævioides Cass., Proc. Acad. N. S. Phila., 1860, p. 190 (Falls of Truando); Hellm., P. Z. S., 1911, p. 1167 (Condoto; Guineo; Calima).

Inhabits the Tropical Zone of the Pacific coast and eastward to the Magdalena. Our Pacific coast specimens agree with others from Panama which Hellmayr (*l. c.*) fixes as the type-locality, but a female from the Magdalena Valley (Malena) is much paler below than any one of eight females from Panama and western Colombia.

Baudo, 1; Upper Atrato, 1; Barbacoas, 6; Malena, 1.

(2150) **Phænostictus macleannani macleannani** (*Lawr.*).

Phlegopsis macleannani Lawr., Ann. Lyc. N. H. N. Y., VII, 1862, p. 285 (Panama).

Found at one station in the Tropical Zone of the Pacific coast and also on the lower Cauca. The Puerto Valdivia specimen agrees essentially with the type and other Panama specimens. Those from Barbacoas have a less well-defined, unspotted, chestnut-rufous area posterior to the breast.

Puerto Valdivia, 1; Barbacoas, 2.

(2152*a*) **Rhopoterpe torquata torquata** (*Bodd.*).

Formicarius torquatus Bodd., Table Pl. Enl., p. 43 (Cayenne).

A pair from the Amazonian Tropical Zone adds this species to the known avifauna of Colombia. The male differs from two lower Orinoco (Suapure) males in having the breast and abdomen centrally barred with black, the female differs from a lower Orinoco female in having the hazel-brown throat area more restricted and less definitely bordered by a black line. These differences may be racial but the material at hand is not, in my opinion, conclusive (see Cherrie, Bull. A. M. N. H., XXXV, 1916, p. 185). *Rhopoterpe torquata tragicus* Cherrie (*l. c.*) based on a female from the Rio Roosevelt appears to differ from *torquata* chiefly in its wider and more extensive white wing-bar.

La Morelia, 2.

(2155*a*) **Formicarius colma nigrifrons** *Gould.*

Formicarius nigrifrons Gould, Ann. Mag. N. H., Ser. 2, XV, 1855, p. 344 (Chamicuros, e. Peru).

Four specimens were secured in the Tropical Zone of Amazonian Colombia. Three have the forehead black while in the third (immature?) it is rufous of the same color as the back. All four specimens may be easily distinguished from any one of twelve specimens of *colma* from the lower

Orinoco (La Union), British Guiana and Cayenne by the greater intensity and greater extent of the black of the underparts, and their much darker ventral region and under tail-coverts. They also have the tail broadly black terminally and raw umber basally, while in most specimens of *colma* it is more olivaceous basally and more narrowly tipped with black.

The material at my command, therefore, indicates the validity of a black-bellied form for which the name *nigrifrons* Gould is probably available. (Consult, however, Hellmayr, Nov. Zool., XIV, 1907, p. 390.)

Formicarius nigrifrons glaucoptera Ridgw. (Proc. U. S. N. M., XVI, 1893, p. 673), the type of which, from British Guiana, is in the American Museum (No. 43536) is apparently not separable from *F. c. colma.*

La Morelia, 3; Florencia, 1.

(2156*a*) **Formicarius analis connectens** *Chapm.*

Formicarius analis connectens Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 173 (Villavicencio, Colombia).

Char. subsp.— Most nearly related to *F. a. saturatus* Ridgw., but cinnamon at the sides of the throat wholly absent or but faintly indicated; upperparts less rufescent, more olivaceous, breast slightly darker, throat-patch less sharply defined, size smaller, ♂, wing 86; tail, 52; tarsus, 31.5; culmen, 18 mm.

This well-marked race is known only from the Tropical Zone at the base of the Eastern Andes. Specimens from La Morelia are somewhat darker above than those from Villavicencio.

La Morelia, 3; Villavicencio, 3.

(2157) **Formicarius nigricapillus destructus** *Hart.*

Formicarius destructus Hart., Nov. Zool., V, 1898, p. 493, (Paramba, n. w. Ecuador).

Formicarius analis destructus Hellm., P. Z. S., 1911, p. 1173 (Nóvita).

A female from San José is duller than the type of *F. n. nigricapillus* and can be matched by several of our fourteen Ecuadorian specimens of *destructus.* The occurrence of *nigricapillus* and a second form of this group ("*Formicarius umbrosus*" Ridgw.) in the same zone (Caribbæan Tropical) in Costa Rica indicates their specific distinctness. Ridgway (Bull. 50, V, p. 118) evidently holds this view but ranks *nigricapillus* as a subspecies of *analis,* while *umbrosus* with allied forms is placed under *F. moniliger* as *Formicarius moniliger umbrosus.* To my mind, however, the derivative relationships of *umbrosus* are with *analis,* while *nigricapillus* and *destructus,* its closely allied representatives in the Tropical Zone of western Colombia and western Ecuador, form a small and distinct group, distinguished mainly by its jet black head, wholly black or blackish, not basally olive-brown, black-tipped, tail, etc. It is probable that both have a common origin but one appears to have entered Central America from the east, the other from the south. The discovery of a form (*Formicarius analis connectens*) at the foot of the Eastern Andes in Colombia, to some extent bridges the gap between the Bolivian *analis* and the northern *saturatus*. We have also a specimen from Zamora in southeastern Ecuador which in the blackness of its tail and breast approaches *destructus;* the head, however, is olivaceous and the upperparts, while somewhat darker, are more as in *connectens*. This specimen suggests the specific identity of the entire group, but the impossibility of this Tropical Zone bird's crossing the Andes and the consequent isolation of the black-headed type, together with the occurrence of this type and another representative of the group in the same faunal region, indicates their specific distinctness.

San José, 1.

(2159) **Formicarius analis saturatus** *Ridgw.*

Formicarius saturatus Ridgw., Proc. U. S. N. M., 1893, p. 677 (Trinidad).
Formicarius hoffmanni Scl. & Salv., P. Z. S., 1879, p. 526 (Remedios).

Occurs in the Atrato, Cauca, and Magdalena Valleys. Our specimens agree with eleven from Trinidad but have the under tail-coverts slightly deeper, while the white loral spot, present in all the Trinidad birds, is absent in four of the Colombian specimens and barely distinguishable in the other five.

Upper Atrato, 1; Puerto Valdivia, 2; Rio Frio, 1; Malena, 3; Puerto Berrio, 2.

(2160*a*) **Formicarius rufipectus carrikeri** *Chapm.*

Formicarius rufipectus carrikeri Chapm., Bull. A. M. N. H., XXXI, 1912, p. 146 (San Antonio, Col.).

Formicarius rufipectus rufipectus Hellm., P. Z. S., 1911, p. 1174 (Pueblo Rico).

Char. subsp.—Similar to *Formicarius rufipectus rufipectus* Salv., but back, sides and flanks pronouncedly grayer; wings somewhat grayer, breast paler, averaging nearer orange-rufous than chestnut, as in *rufipectus*, the center of the abdomen much paler, ochraceous rather than chestnut.

Common in the Subtropical Zone of the Western and Central Andes.

La Frijolera, 1; Salencio (Nóvita Trail), 1; San Antonio, 3; Andes w. of Popayan (alt. 10340 ft.), 1; Miraflores, 6; Salento, 1.

(2164) **Chamæza brevicauda columbiana** *Berl. & Stolz.*

Chamæza columbiana Berl. & Stolz., P. Z. S., 1896, p. 385 (Bogotá). (= *Chamæza bogotensis* Auct. *nomen nudum*).

This appears to be a species of the Tropical Zone. It was common in the heavy forests at Buena Vista, but was not found at Villavicencio at the base of the Andes, doubtless because of the lack of suitable haunts. In the primeval forests about La Morelia (alt. 600 ft.), however, it was represented by a form which I provisionally refer to *C. b. nobilis.*

The striking difference in the song of this species and that of *C. turdina* has been well described by Fuertes (Bird-Lore, 1914, p. 180).

Buena Vista, 9.

(2167) **Chamæza brevicauda (nobilis ?)** *Gould.*

Chamæza nobilis Gould, Ann. & Mag. N. H., Ser. 2, XV, 1855, p. 344 (Chamicuros, Peru).

Three specimens from La Morelia appear to represent this form of which, however, I have no specimens for comparison. They have the tail tipped with white rather than with "pale fulvous" and may be separable, but I hesitate to take this step without direct comparison with authentic specimens of *nobilis.*

La Morelia, 3.

(2169) **Chamæza turdina** *Cab. & Hein.*

Chamæza turdina Cab. & Hein., Mus. Hein., II, 1859, p. 6 (Bogotá).

Probably not uncommon in the upper part of the Subtropical Zone of the Central and Eastern Andes, where the density of the vegetation and the bird's elusive habits make it exceedingly difficult to secure specimens. We did not see or hear this species in the vicinity of Bogotá, but in the Central Andes above Miraflores at an altitude of 8000 feet, its singular, prolonged whistle was not infrequently heard and Fuertes secured one specimen. Two others were taken by Miller, one at La Palma, the other at Andalucia (alt. 7000 ft.) on the crest of the Eastern Andes. The latter specimen being from the range from which the type was secured is probably typical of the species. It agrees closely with the Miraflores bird, but the La Palma specimen is more olivaceous above; probably an individual variation.

From *C. brevicauda* this species is readily distinguished by the absence of the subterminal black tail-tip and by other characters as has been shown by Hellmayr (Archiv. für Naturg., 1912, p. 133).

Miraflores, 1; La Palma, 1; Andalucia, (7000 ft.) 1.

(2171) **Chamæza mollissima** *Scl.*

Chamæza molissima Scl., P. Z. S., 1855, p. 89, pl. 95 (Bogotá).

Found by us only in the Temperate Zone of the Central Andes. Specimens from Laguneta are larger than the type (wing, ♂, 90; ♀, 85 mm.) and more narrowly barred below than Sclater's figure of it. An Almaguer specimen is decidedly more rufescent above approaching in this respect a specimen from "Ambato," Ecuador. I have seen no topotypical specimens.

Almaguer, 1; Laguneta, 2.

(2173) **Pittasoma rosenbergi** *Hellm.*

Pittasoma rosenbergi Hellm., Rev. Franc. d'Orn., II, 1911, p. 51; P. Z. S., 1911, p. 1175 (Rio Sipi, 150 ft., w. Col.).

Of this interesting bird, hitherto known only from the male type, we have two adult males and one adult and one immature female, all from the low Pacific coast region to which the species appears to be restricted. The males agree with Hellmayr's (*l. c.*) description.

The adult female differs from the male mainly in having the broad, black superciliary striped with white. The belly is more fulvous but this feature appears to be individual rather than sexual since it is not shown by the immature female. In that specimen the superciliary is barely evident, this part of the head being much like the crown which is dull chestnut bordered with blackish. The tips to the coverts are ochraceous, of the color of the throat; the belly has a slight ochraceous tinge but is by no means so deeply colored as in the adult female. A few soft downy, blackish feathers of the juvenal plumage are on the flanks. The ingrowing whitish feathers at the sides of the abdomen exhibit a faint but unmistakable trace of cross-bars, and this character is present but in an even fainter degree on the remaining three specimens.

Baudo (3500 ft.), 1; Nóvita, 2; Noanamá, 1.

(2173*a*) **Pittasoma harterti** sp. nov.

Char. sp.— Most nearly related to *Pittasoma rufopileatum* Hart. and *P. rosenbergi* Hellm., but male with the entire underparts ochraceous-orange; the superciliary stripe in the female ochraceous-orange and black.

Type.— No. 117,876, Am. Mus. Nat. Hist. ♂ ad. Barbacoas, Nariño, Colombia, August 25, 1912; W. B. Richardson.

Description of Male.— (Four specimens). Crown and nape bright rufous-chestnut slightly paler laterally; lores and a broad superciliary extending to the nape black; back light brownish olive, slightly browner than in *P. rosenbergi,* the feathers widely margined with black; rump browner, unstriped; the feathers much elongated and 'fluffy'; tail raw umber; wing-quills black margined externally with Brussels-brown, this color increasing in extent inwardly and occupying the entire outer web of the inner secondaries and both webs of the tertials which have a rounded buffy terminal shaft-spot, and a slightly blackish edging; primary coverts blackish, unmarked; remaining wing-coverts of much the same brown as the exposed surface of the wing, with conspicuous buffy whitish terminal spots occupying most of the end of the feather which is narrowly margined with black; under wing-coverts blackish with some mixture of rusty, those at the base of the outer primaries broadly tipped with white forming a conspicuous white patch; throat and sides of the head deep, clear orange-rufous somewhat richer than in *P. rosenbergi,* the feathers without any indication of spots as in *P. rufopileatum,* on three specimens, but with two basal concealed lateral black spots on one feather in one specimen; rest of the underparts of the same tone of color as the throat but less intense, especially medianly, the sides, flanks and tibiæ brownish olive, the ventral region and under tail-coverts more buffy; in one of four males the underparts from the posterior margin of the throat to, and including the upper part of the tibiæ and under tail-coverts, but excluding the thighs and flanks, are more or less regularly and evenly barred with black; in the remaining three males the bars are wanting in some places, and faint or but merely suggested by detached spots in others, no regularity being shown by their distribution except on the ventral region and under tail-coverts where they are present much as in the fully barred specimen; feet brownish black; maxilla black; mandible wholly black in the barred specimen; gonys terminally horn-color in the three comparatively unbarred specimens.

Description of Female.— (Two specimens). Resembling the male but the lores blackish with a whitish supraloral stripe, the superciliary strongly streaked with ochraceous-rufous, the spots on wing-coverts more ochraceous, the under wing-coverts and white patch at base of primaries tinged with rufous; the throat as in the male, the remainder of the underparts with but mere suggestions of broken bars much as in the least barred male.

Measurements.

Place	Sex	Wing	Tail	Tarsus	Culmen
Barbacoas, Col.	♂	89	32	46	28
" "	♂	89	30	45	28
" "	♂	90.5	30	45	27
" "	♂	88.5	30.5	47.5	26.5
" "	♀	92	29.5	45	27.5
" "	♀	92	32	48	28

It is assuredly surprising to find two evidently representative but apparently distinct species of birds at localities in the same fauna, as closely situated as are the ranges of *Pittasoma rufopileatum* and the bird described as *P. harterti.* It should be remembered, however, that in this fauna, though at more widely separated stations, we already have three species of *Pittasoma,* namely, *P. rufopileatum* of northwestern Ecuador, *P. rosenbergi* of the headwaters of the San Juan, and *P. michleri* of the lower Atrato and eastern Panama. It is evident, therefore, that this genus, which is restricted to the Colombian-Pacific Fauna, has a marked tendency to break up into distinct species in an area where many other species do not show even subspecific variation. Possibly therefore, it is not much more remarkable to find different though representative species of *Pittasoma* in northwestern Ecuador and southwestern Colombia, than it is to find them in central western Colombia and northwestern Colombia.

Of *P. rufopileatum* I have seen no specimens, but Hartert's excellent plate[1] of this species forms an admirable substitute for skins. It should be added, however, that Hellmayr (P. Z. S., 1911, p. 1176) has shown that the bird figured by Hartert as young, is an adult female. Hellmayr remarks: "This is quite evident from the large series, partly in the Tring Museum, partly in the possession of Mr. Rosenberg, which I have examined."

I take pleasure in naming this bird for Dr. Ernest Hartert, in recognition of his important contributions to ornithology, and particularly to our knowledge of the ornis of the Pacific coast region.

(2175) **Grallaria squamigera** *Prev.*

Grallaria squamigera Prev., Voy. Venus, Zool., 1849, p. 198, pl. 3, (Bogotá).

Four specimens from the Temperate Zone of the Central Andes are much deeper plumbeous above than an old 'Bogotá' skin. The difference, if actual, would constitute a well-marked race of the Central Andean bird, but it is doubtless due to fading in the Bogotá bird. In the Central Andean specimens the throat averages whiter, but this is probably individual.

Laguneta, 2; Santa Isabel, 2.

(2178*a*) **Grallaria guatimalensis chocoensis** subsp. nov.

Char. subsp.— Resembling *Grallaria guatimalensis princeps* (Scl. & Salv.) in general color but crown more olive, back richer, wings more olive less rufous, lores mixed rusty and blackish rather than whitish; size very much smaller. Wing, 89; tail, 28; tarsus, 42; culmen, 22 mm.

Type.— No. 123, 351, Am. Mus. Nat. Hist. ♂, Baudo (alt. 3000 ft.), Chocó, Colombia; July 13, 1912; Mrs. E. L. Kerr.

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[1] Nov. Zoöl., IX, 1902, pl. viii.

Remarks.— This form known only from the type, is a diminutive of *Grallaria guatimalensis* from which it is possibly specifically distinct. *Grallaria regulus* Scl. of Ecuador, resembles *guatimalensis* above but is much paler below and its white throat-patch and strongly white or buff-streaked olivaceous breast, more olive wings, etc. show that it is quite a different species, which the form here described does not approach.

(2182*a*) **Grallaria alleni** *Chapm.* (Plate XXXIX.)

Grallaria alleni Chapm., Bull. A. M. N. H., XXXI, 1912, p. 148 (Salento, Col.).
Char. sp.— Allied to *Grallaria varia* (Bodd.) but distinguished chiefly by its darker upperparts, whitish, unmarked belly, black markings in the malar streaks, and other characters.

Known only from the type, taken at Salento.

(2187) **Grallaria ruficeps** *Scl.*

Grallaria ruficeps Scl., P. Z. S., 1873, p. 729 (Medellin, Antioquia); Scl. & Salv., P. Z. S., 1879, p. 526 (Medellin; Sta. Elena).

Inhabits the Temperate Zone of the Central and Eastern Andes. It was common in the first-named range but a specimen collected by Fuertes was the only one observed in the Bogotá region. This closely agrees with other birds in our series which, as a whole, is uniformly colored and shows no approach toward the Ecuadorian *G. nuchalis*. An old 'Bogotá' skin agrees with a fresh one above but is decidedly browner below.

Laguneta, 8; Almaguer, 5; El Piñon (above Fusugasugá), 1.

(2188) **Grallaria rufocinerea** *Scl. & Salv.*

Grallaria rufo-cinerea Scl. & Salv., P. Z. S., 1879, p. 526 (Sta. Elena, Antioquia).

Our five specimens were taken in the Temperate Zone of the Central Andes near the Quindio Pass. I have no material for comparison but the locality in question is not far distant from the type-locality.

Laguneta, 4; above Salento, 1.

(2189) **Grallaria monticola** *Lafr.*

Grallaria monticola Lafr., Rev. Zool., 1847, p. 68 (Bolivian Andes).

Common in the upper Temperate Zone of the Central Andes. We have not met with it elsewhere. Our Colombian specimens agree with four recently collected birds from Mt. Pichincha but differ markedly from an old 'Bogotá' and an old Ecuador skin. The latter are almost exactly alike in color. Below they are less ochraceous, more orange; above, less olive more rufous in tone. The difference as a whole is very pronounced and the older skins appear to be the most richly colored. I have no Bolivian specimens for comparison.

Santa Isabel, 9; Valle de las Pappas, 7.

(2193*a*) **Grallaria milleri** *Chapm.* (Plate XXXIX.)

Grallaria milleri Chapm., Bull. A. M. N. H., XXXI, 1912, p. 147, (Laguneta, Cen. Andes.)

Char. sp.—Apparently most nearly related to *Grallaria erythrotis* Scl. & Salv., but ear region brownish ochraceous not ochraceous-orange; breast tawny olive, not ochraceous, back raw-umber, not grayish olive, etc.

This species is known only from the Temperate Zone of the Central Andes at and near Laguneta, whence came our seven specimens. *Grallaria erythrotis* of Bolivia, presumably its nearest described relative, is known to me from one Yungas, Bolivia specimen.

Laguneta, 7.

(2194) **Grallaria hypoleuca** *Scl.*

Grallaria hypoleuca Scl., P. Z. S., 1855, p. 88 (Bogotá).

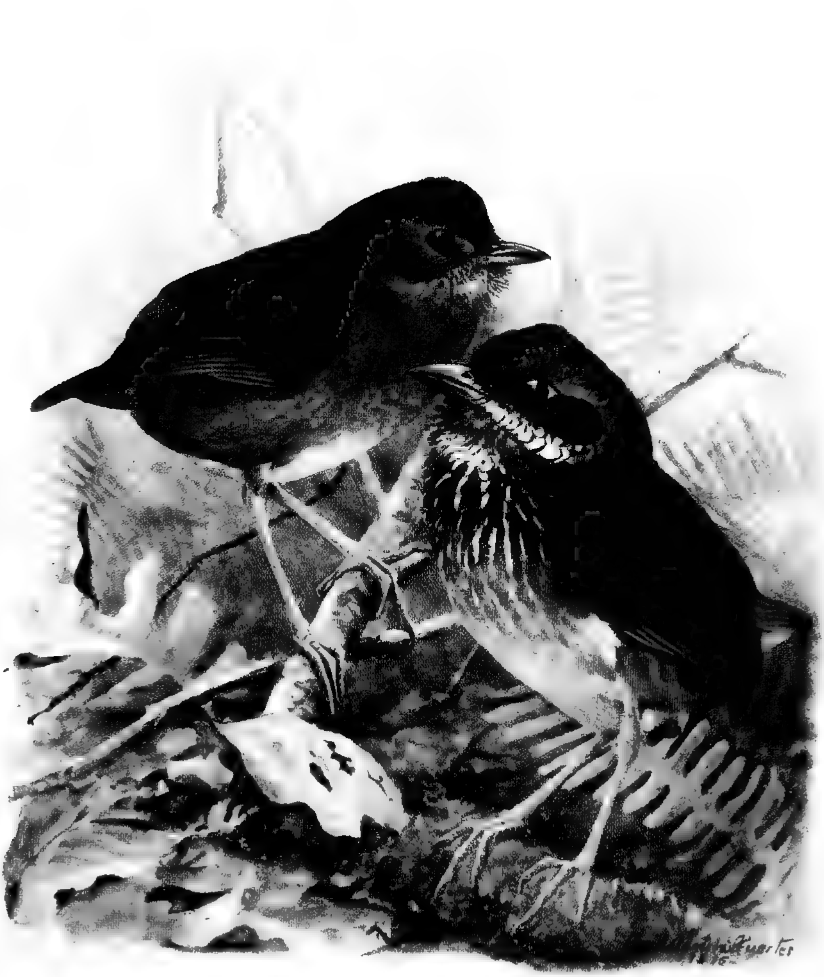
Secured only in the lower part of the Subtropical Zone on the western slope of the Eastern Andes and at head of the Magdalena. Our specimens are very uniform in color, a bird taken at La Candela on May 10, being somewhat more deeply colored than the others.

Near San Agustin, 1; La Candela, 1; Fusugasugá, 4; Aguadita (6500 ft.), above Fusugasugá, 2.

(2199) **Grallaria ruficapilla ruficapilla** *Lafr.*

Grallaria ruficapilla Lafr., Rev. Zool., 1842, p. 333 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 527 (Concordia, Sta. Elena).

We have found this to be the commonest and most widely distributed bird of its genus. It inhabits mainly the Subtropical Zone but ranges as low as 4500 feet and rarely reaches upward to the lower border of the Temperate Zone. It frequents rather more open, scrubby and arid places than the other birds of the group, and its loud, double-noted whistle, translated by the natives as "compra pan" is one of the most characteristic bird calls. There is considerable variation in the intensity of color above, and



MILLER'S ANTPITTA. *Grallaria milleri* (Chapm.)
ALLEN'S ANTPITTA. *Grallaria alleni* (Chapm.)
(About one-half natural size)

heaviness of the stripes below, but it appears to be individual and I can detect no racial difference between topotypical (Bogotá region) skins and those from the Western and Central Andes. Old 'Bogotá' skins have the back notably browner, less olivaceous above than our recently collected ones.

San Antonio, 4 (one in nestling plumage); Cerro Munchique, 2; La Florida, 2; Cocal, 1; Ricaurte, 3; Miraflores, 2; Salento, 4; Rio Toché, 1; El Eden, 3; Fusugasugá, 1; El Roble, 2; El Piñon, 1.

(2202*a*) **Grallaria brevicauda minor** *Tacz.*

Grallaria minor Tacz., P. Z. S., 1882, p. 33 (Peru).

Two specimens from La Morelia and two from Florencia in the Tropical Zone of Amazonian Colombia, show on comparison with a specimen of *brevicauda* from British Guiana, the characters attributed to the Peruvian race by Taczanowski. The posterior parts of the upper surface, and the exposed portion of the inner wing-quills, are decidedly less rufous and more olivaceous, the breast is more heavily margined and the size considerably less, as the appended measurements of males show:

	Wing	Tail	Tarsus	Culmen
G. b. brevicauda	81	37	45.5	19
G. b. minor	76	35	36.5	18
" "	77	34	40.5	18

(2204) **Grallaria modesta** *Scl.*

Grallaria modesta Scl., P. Z. S., 1855, p. 89 (Bogotá).

Found only at Villavicencio where Fuertes shot two specimens and Cherrie one. This appears to be a representative of *G. b. brevicauda* with which it doubtless intergrades.

Villavicencio, 1.

(2196) **Oropezus rufula rufula** (*Lafr.*).

Grallaria rufula Lafr., Rev. Zool., 1843, p. 99 (Bogotá).

Inhabits the Temperate Zone of all three ranges. Our series of fifteen specimens (including four from Mt. Pichincha) shows much variation in color, some being rich ochraceous-tawny, others nearer ochraceous-buff below with a corresponding difference above. This variation, however, appears to be individual rather than racial. Both types of color are found in the Bogotá district. An old 'Bogotá' skin which has been compared with the type and is marked typical, is much like a male specimen collected by us at Chipaque but is somewhat richer in color.

I have seen no specimens of the Peruvian *G. r. obscura* Berl. & Tacz. (P. Z. S., 1896, p. 385).

Paramillo, 1; Andes west of Popayan (alt. 10340 ft.), 2; Laguneta, 1; Santa Isabel, 3; El Piñon, 1; Chipaque, 1.

(2206*a*) **Hylopezus dives barbacoæ** *Chapm.*

Hylopezus dives barbacoæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 617 (Barbacoas, Col.).

Char. subsp.— Similar to *H. d. dives* Salv. but crown darker, its color extending little if any on to the back, which is dark olivaceous rather than slaty; back, as a rule, without fulvous shaft-streaks, exposed margins of the wing-quills averaging less cinnamomeus, Dresden-brown rather than tawny.

Known only from the Tropical Zone of the Pacific coast. It is evidently an intermediate between *H. d. dives* and *H. fulviventris* from the eastern base of the Eastern Andes.

There is no geographical reason why *dives* and *barbacoæ* should not intergrade, and although *fulviventris* is effectually isolated from the latter by the intervening Andes, it is evidently a representative form.

Alto Bonito, 4; San José, 1; Barbacoas, 4.

(2207) **Hylopezus dives fulviventris** (*Scl.*).

Grallaria fulviventris Scl., P. Z. S., 1858, pp. 68, 282 (Rio Napo).

A male from La Morelia is evidently to be referred to this race of which I have seen no authentic specimens. It closely resembles *H. d. barbacoæ* of western Colombia, but has the back more olivaceous, the lores whitish instead of ochraceous-orange, the forehead with no trace of ochraceous, the wings edged with rufous-brown; it is also somewhat larger. Wing, 80; tarsus, 39; culmen, 20 mm.

La Morelia, 1.

(2212) **Hylopezus perspicillata periopthalmica** *Salvad. & Festa.*

Grallaria periopthalmica Salvad. & Festa, Boll. Mus. Torino, XIII, No. 330, 1898, p. 2 (w. Ecuador).

Confined to the Tropical Zone of the Pacific coast, from the upper San Juan southward. Specimens from Baudo and Barbacoas differ from

Panama (topotypical) specimens of *perspicillata* in their darker crown, more ochraceous (rather than fulvous) lores and orbital region.

Baudo (3500 ft.), 4; Barbacoas, 1.

(2212*a*) **Hylopezus perspicillata perspicillata** *Lawr.*

Grallaria perspicillata LAWR., Ann. Lyc. N. H. N. Y., VII, 1862, p. 303 (Lion Hill, Panama).

Evidently occupies the lower Atrato region and eastward into Antioquia. In its generally paler colors, a specimen from the Rio Salaqui agrees with Panama specimens rather than with *periopthalmica.* A Puerto Valdivia male has the fulvous markings still paler while its olive-green back is more like that of *G. p. lizanoi* than of true *perspicillata.*

Rio Salaqui, 1; Puerto Valdivia, 1.

(2213*a*) **Grallaricula costaricensis** *Lawr.*

Grallaricula costaricensis LAWR., Ann. Lyc. N. H., N. Y., VIII, 1867, p. 346 (Barranca, Costa Rica).

A male from Cocal and a female from San Antonio are more extensively washed with ochraceous below than five of six specimens of *costaricensis.* The male has the entire underparts ochraceous; the female has the abdominal region white; above they agree in color with *costaricensis* but they are somewhat larger. Doubtless the west Colombian bird will be found to be separable but this species is so variable in color that I should prefer to see a much larger series before adding to the number of described races. *Grallaricula vegeta* Bangs, the type of which I have examined, appears to me to be inseparable from *costaricensis.*

Grallaricula flavirostris brevis Nels., of which I have seen the type and three topotypes, has the back more olivaceous, the crown grayer than in *costaricensis.* This form may be confined to the Subtropical Zone of Mt. Pirri. In the absence of authentic specimens of *flavirostris* I cannot comment on its relationships to that race, but it is apparent that all the specimens examined from Costa Rica, Panama, and Colombia, represent but one species. Two specimens from Zaruma, Ecuador, which may be *flavirostris,* are more yellow below than *costaricensis* and have the maxilla as well as mandible yellow.

Cocal, 1; San Antonio, 1.

Measurements.

	Sex	Wing	Tail	Tarsus	Ex. Cul.
Cocal, Col.	♂	68	24.5	21	15
San Antonio, Col.	♀	67	25	23	15.5
Mt. Pirri, Panama	♂	63.5	21	22	16
" " [1]	♂	62.5	25.5	24	15.5
" "	♀	63	23	23	15
" "	♀	63	23	21.5	14.5
Chiriqui, Panama [2]	♀	63.5	24.5	—	15.5
Chitra, Veragua	?	62.5	—	22	—
Sarapiqui, Costa Rica	♀	62	22	21	14
Costa Rica	?	63	24	20	14
Zaruma, Ecuador [3]	♂	65.5	27	23	15
" "	♂	68	27	19	—

(2215) **Grallaricula nana** (*Lafr.*).

Grallaria nana Lafr., Rev. Zool., 1842, p. 334 (Bogotá).
Grallaricula nana Scl. & Salv., P. Z. S., 1879, p. 527 (Sta. Elena).

A specimen from Laguneta and another from above Salento in the Central Andes are the only ones we secured. They agree fairly well with two birds from Merida and with one from 'Bogotá' loaned me by Mr. Bangs.

Laguneta, 1; above Salento, 1.

(2218) **Grallaricula cucullata** (*Scl.*).

Conopophaga cucullata Scl., P. Z. S., 1856, p. 29, pl. cxix, (Bogotá).
Grallaricula cucullata Scl. & Salv., P. Z. S., 1879, p. 527 (Sta. Elena).

Two specimens from La Candela (alt. 6500 ft.) in the Central Andes at the head of the Magdalena River are evidently to be referred to this species of which we have no other specimens.

La Candela, 2.

Family DENDROCOLAPTIDÆ. Woodhewers, Ovenbirds.

(2240) **Furnarius agnatus** *Scl. & Salv.*

Furnarius agnatus Scl. & Salv., Nomencl. Neotrop., 1873, p. 159 (Santa Marta); Allen, Bull. A. M. N. H., XIII, 1900, p. 159 (Bonda; Santa Marta).

Inhabits the arid coastal zone and ranges up the Magdalena River, at least to Puerto Berrio and probably further. The more northern specimens agree with a series from Santa Marta, but specimens from Puerto Berrio and Malena are more deeply colored than typical *agnatus*. It would not be surprising if the upper Magdalena bird should prove to be separable from the one inhabiting the more arid coastal region.

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[1] Type of *Grallaricula flavirostris brevis* Nels.
[2] Type of *Grallaricula vegeta* Bangs.
[3] *Grallaricula flavirostris* Scl.?

Turbaco, 2; Calamar, 2; Boca de Chimi, 1; Puerto Berrio, 1; Malena, 2.

240

(2255*a*) Upucerthia excelsior columbiana *Chapm.*

Upucerthia excelsior columbiana Chapm., Bull. A. M. N. H., XXXI, 1912, p. 148 (Paramo of Santa Isabel, Cen. Andes, Col.).

Char. subsp.— Similar to *Upucerthia excelsior excelsior* Scl., but bill stouter and longer, superciliary and light areas of underparts whiter, brownish areas below hair-brown rather than broccoli-brown.

Found by us only in the Paramo of Santa Isabel in the Central Andes where Allen and Miller secured twenty specimens. In the British Museum Catalogue (XV, p. 19) Sclater lists specimen "*a*. ♀ ad. SK. Pichincha, Ecuador (Fraser)" and specimen "*b* ♀ ad. SK. Panza [Chimborazo], Ecuador, (Fraser)" as types of *Upucerthia excelsior*. Accepting the locality first-named as the type-locality I made my original comparison with Mt. Pichincha specimens. I find, however, that in the original description (P. Z. S., 1860, p. 77), Sclater made no mention of Pichincha but gave as the habitat of the species: "In Monte Chimborazo, reipubl. Equator, ad. alt. 14,000 ped." It follows, therefore, that Chimborazo, not Pichincha, as stated by me, is the type-locality of the species. Fortunately we have since received an excellent series of fourteen specimens collected by Richardson on Chimborazo which confirm the characters ascribed to the Colombian bird.

Paramo of Santa Isabel, 20.

(2280*a*) Lochmias sororia *Scl. & Salv.*

Lochmias sororia Scl. & Salv., P. Z. S., 1873, p. 511 (Venezuela).

An adult male from Miraflores in the Central Andes agrees with an adult female from Buena Vista, above Villavicencio, and is evidently to be referred to this species. A young female from Miraflores has the spots on the underparts fewer and less distinct.

Lochmias obscurata Cab., to which I refer two specimens from Inca Mines, Peru, is much darker, less rufous above and below, and has fewer, less evident spots on the underparts, those which are present being confined largely to the median line.

Miraflores, 2; Buena Vista, 1.

(2285) **Schizœaca fuliginosa** (*Lafr.*).

Synallaxis fuliginosa Lafr., Rev. Zool., 1843, p. 290 (Colombia).

Inhabits the Paramo of the Central and Eastern Andes, descending to the upper border of the Temperate Zone. Specimens from the Central Andes appear to average slightly darker in color. While evidently a representative of the Ecuadorian *S. griseo-murina* (Scl.) a specimen from Almaguer shows no approach toward that form.

Almaguer, 1; Santa Isabel, 4; Tocaimito above Bogotá, 2; El Piñon, 1.

(2295) **Leptasthenura andicola** *Scl.*

Leptasthenura andicola Scl., P. Z. S., 1869, p. 636, pl. xlix, fig. 2 (Panza, Ecuador) Allen, Bull. A. M. N. H., XIII, 1900, p. 159 (Sierra Nevada).

Met with only on the Paramo of Santa Isabel in the Central Andes. Four specimens agree in color with a topotypical series from Chimborazo but average more narrowly streaked above.

Paramo of Sta. Isabel, 4.

(2305) **Synallaxis azaræ elegantior** *Scl.*

Synallaxis elegans Scl. (nec Less.) P. Z. S., 1856, p. 25 (Bogotá).

Synallaxis elegantior Scl., Cat. A. B., 1862, p. 151.

Synallaxis azaræ elegantior Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 618 (crit.).

Inhabits the Temperate Zone of the Eastern Andes. In view of the occurrence of *S. a. media* at Quito, it might be expected that specimens from south of Quito would be intermediate between *media* and *azaræ*, but the distributional problem is much involved by the fact that seven specimens from Zaruma (6000 ft.), one from Loja (7000 ft.), and one from Naranjo (2000 ft.) in southern Ecuador, are all clearly referable to *elegantior* of Bogotá! It is sufficiently surprising to find in this group identical forms occupying the Temperate Zone in the Bogotá region and the Tropic Zone near Guayaquil, but the case is rendered still more puzzling by the occurrence between these points of another form with which, at least from the north, intergradation with the first-named form appears to be proven.

Chipaque, 5.

(2309*a*) **Synallaxis azaræ media** *Chapm.*

Synallaxis azaræ media Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 618 (Salento, Col.).

Char. subsp.— Most closely resembling *S. a. azaræ* d'Orb. of Bolivia and southeast Peru, but underparts generally paler, abdomen, particularly, whiter, flanks grayer, frontal band grayer and wider. Similar to *S. a. elegantior* Scl., of the restricted Bogotá region, but lores gray, not white, postocular stripe grayish olive, not pale ochraceous-buff; underparts less white, the breast gray, not white, with or without a faint grayish wash; throat showing more black, flanks and under tail-coverts grayish olive rather than buffy olive; back averaging more ochraceous.

Inhabits the upper parts of the Subtropical and lower parts of the Temperate Zone (7000 to 10,500 ft.) in the western and Central Andes and southward into Ecuador (Pichincha).

Cerro Munchique, 6; Valle de las Pappas, 7; Miraflores, 4; Salento, 5; Laguneta, 3; Sta. Elena, 3; Barro Blanco, 1; El Eden, 6; above Ibagüe (7000 ft.), 1; La Candela, 2; La Palma, 3.

(2310) **Synallaxis mœsta mœsta** *Scl.*

Synallaxis mœsta Scl., P. Z. S., 1856, p. 26 (Bogotá).

Common in the Tropical Zone at the eastern base of the Eastern Andes. In the heavy forest of Amazonian Colombia, further south, it is replaced by a darker form which I have described as *Synallaxis mœsta obscura.*

Buena Vista, 9; Villavicencio, 2.

(2310*a*) **Synallaxis mœsta obscura** *Chapm.*

Synallaxis mœsta obscura Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 620 (La Morelia, Col.).

Char. subsp.— Similar to *S. m. mœsta* Scl. but darker throughout, the upperparts browner, the white streakings of the throat more restricted, the remainder of the underparts nearly one color, the breast of the same olivaceous shade as the sides and flanks instead of being grayer, the abdomen with little or no grayish.

Known only from the Tropical Zone in Amazonian Colombia.

La Morelia, 2.

(2317) **Synallaxis albescens albigularis** *Scl.*

Synallaxis albigularis Scl., P. Z. S., 1858, p. 63 (Rio Napo).
Synallaxis albescens Scl. & Salv., P. Z. S., 1879, p. 521(Medellin).

Inhabits the Tropical Zone from Caldas eastward. In Cauca Valley specimens the breast averages paler than in those from Villavicencio (which doubtless are typical) but the difference is entirely bridged by individual variation in both series.

La Frijolera, 1; Caldas, 1; Cali, 3; La Manuelita, 4; Guengüe, 1; Rio Frio, 1; Calamar, 3; Puerto Berrio, 2; Fusugasugá, 1; Quetame, 2; Villavicencio, 4.

(2319) **Synallaxis subpudica** *Scl.*

Synallaxis subpudica Scl., P. Z. S., 1874, p. 10 (Bogotá); Stone, Proc. Acad. N. S. Phila., 1899, p. 306 (Ambalema).

We met with this species only on the Bogotá Savanna, and hence in the Temperate Zone of the Eastern Andes, but Stone records it from Ambalema, in the Magdalena Valley.

Bogotá Savanna, 7.

(2320) **Synallaxis pudica pudica** *Scl.*

Synallaxis pudica Scl., P. Z. S., 1859, p. 191 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 521 (Remedios).

Inhabits the Tropical Zone of the Magdalena Valley and westward into Antioquia, ascending in clearings or along trails into the lower border of the Subtropical Zone.

Near San Agustin, 2; Andalucia (3000 ft.), 6; Fusugasugá, 1; Anolaima, 1; La Frijolera, 1.

(2320*a*) **Synallaxis pudica nigrifumosa** *Lawr.*

Synallaxis nigrifumosa Lawr., Ann. Lyc. N. H. N. Y., VIII, 1867, p. 181 (Greytown, Nicaragua).

Synallaxis pudica Hellm., P. Z. S., 1911, p. 1148 (Sipi; Pueblo Rico).

Inhabits the Tropical Zone of the Pacific coast of Colombia. Specimens from this region average somewhat larger than those from Nicaragua and are slightly grayer below and less intensely olivaceous above. They are, however, nearer to true *nigrifumosa* in the color of the parts named than they are to *pudica,* while the tint of chestnut-rufous of the crown and wings is alike in Nicaraguan, Costa Rican, and west Colombian specimens. In short, while not wholly typical, specimens from the Pacific coast region of Colombia are nearer to the Central America, than to the Bogotá form.

Alto Bonito, 6; Dabeiba, 2; Iguamiando, Chocó, 1; Bagado, 1; Chocó, 1; Noanamá, 2; Nóvita, 1; San José, 3; Los Cisneros, 2; Barbacoas, 4; Ricaurte, 2.

(2320*b*) **Synallaxis pudica caucæ** *Chapm.*

Synallaxis pudica caucæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 622 (La Manuelita, Cauca Valley).

Char. subsp. Similar to *S. p. pudica* Scl., but the crown is paler, cinnamon-rufous rather than chestnut-hazel; the back mouse-gray without the olivaceous wash of *pudica,* the rump and upper tail-coverts dark grayish olive, paler than in *pudica.*

This, the palest form of the group, appears to be restricted to the Cauca Valley. It is one of the comparatively few races confined to that region.

La Manuelita, 3; below Miraflores, 2; Cali, 1; Guengüe, 1.

(2321*a*) **Synallaxis gujanensis columbianus** *Chapm.*

Synallaxis gujanensis columbianus CHAPM., Bull. A. M. N. H., XXXIII, 1914, p. 620 (Buena Vista, Col.).

Char. subsp.— Similar to *S. g. gujanensis* (Gm.), but the forehead grayer the underparts much whiter, the breast very faintly tinted with grayish instead of strongly washed with warm buff; the sides and flanks rather warm grayish olive instead of tawny-olive; auricular region grayer.

Inhabits the Tropical Zone at the eastern base of the Eastern Andes.

Buena Vista, 6; Villavicencio, 7.

(2332*a*) **Synallaxis cinnamomea fuscifrons** *Madar.*

Synallaxis fuscifrons MADAR., Orn. Monatsber., 1913, p. 22 (Aracatuca, Santa Marta, Col.).

Leptoxura cinnamomea WYATT, Ibis, 1871, p. 331 (Paturia).

Synallaxis cinnamomea ALLEN, Bull. A. M. N. H., XIII, 1900, p. 158 (Cienaga).

This is evidently a form of the northern coastal region, which, however, extends up the Atrato to Bagado. It may easily be distinguished from true *cinnamomea* by its much brighter color and olive-gray forehead.

Bagado, 2; Atrato, 1; La Playa, 2; Calamar, 2.

(2335) **Synallaxis unirufa** *Lafr.*

Synallaxis unirufa LAFR., Rev. Zool., 1843, p. 290 (Bogotá); SCL. & SALV., P. Z. S., 1879, p. 521 (Dept. Antioquia); HELLM., *Ibid.*, 1911, p. 1148 (Tatamá Mt., 6700 ft.).

Apparently of local distribution in the Subtropical and Temperate Zones. We did not meet with it in the Central Andes. Specimens from the Western Andes have stouter bills but otherwise agree with those from the Eastern Andes.

San Antonio, 1; Andes w. of Popayan (10,340 ft.), 5; Cocal, 6000 ft., 3; 4000 ft., 1; Fusugasugá, 2; El Roble, 4; El Piñon, 2.

(2338) **Synallaxis candæi candæi** *Lafr. & d'Orb.*

Synallaxis candæi LAFR. & d'ORB., Rev. Zool., 1838, p. 165 (Carthagena — type examined); CASS., Proc. Acad. N. S. Phila., 1860, p. 193 (Carthagena); STONE, *Ibid.*, 1899, p. 312 (Carthagena); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 158 (Valencia).

This species appears to be restricted to the arid northern coastal zone.

La Playa, 2; Calamar, 1; Remolino, 1.

(2345) **Synallaxis gularis gularis** *Lafr.*

Synallaxis gularis Lafr., Rev. Zool., 1843, p. 290 (Colombia).

Synallaxis gularis rufipectus Chapm., Bull. A. M. N. H., XXXI, 1912, p. 149 (Laguneta, Cen. Andes, Col.).

Inhabits the Temperate Zone in all three ranges. A male collected at El Piñon just south of Bogotá, is much less rufescent above and more rufescent below than two 'Bogotá' skins in the Museum collection. The latter are bright amber-brown above with the jugulum and center of the breast grayish, while the El Piñon specimen is uniform ochraceous-buff below. It thus more nearly resembles *S. g. rufipectus* in general color than it does the Bogotá specimens which I assume represent true *gularis*. One of the latter has indeed been compared with Lafresnaye's type which it resembles but has the breast somewhat paler. Not one of eight specimens from the Western and Central Andes in Colombia and three from near Quito are so bright as these two 'Bogotá' specimens, but the occurrence at El Piñon, in the heart of the Bogotá region, of a specimen which is essentially like those of the Western Andes indicates either that two forms occur in the Eastern Andes or that the two Bogotá skins are not normally colored and have perhaps undergone some change in color since collected. I incline to the latter rather than the former theory and therefore enter my *Synallaxis gularis rufipectus* as a synonym of *S. g. gularis*.

Paramillo, 1; Andes w. of Popayan (10,340 ft.), 4; Laguneta, 2; El Piñon, 1.

(2348*a*) **Synallaxis rutilans caquetensis** *Chapm.*

Synallaxis rutilans caquetensis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 621 (Florencia, Col.).

Char. subsp.— Similar to *S. r. amazonica* Hellm., but the rufous areas much deeper (mahogany-red rather than cinnamon-rufous) less extensive below and more extensive above, where they occupy most of the crown and back; flanks and abdominal region olive-fuscous with a slight tint of the color of the breast, rather than buffy brown.

This well-marked race is known only from Amazonian Colombia.

Florencia, 3.

(2358) **Siptornis antisiensis** (*Scl.*).

Synallaxis antisiensis Scl., P. Z. S., 1858, p. 457 (Cuenca, Ecuador).

Siptornis antisiensis Allen, Bull. A. M. N. H., XIII, 1900, p. 158 (Valparaiso).

Found by us only on the subtropical slopes arising from the Magdalena Valley. Our specimens average considerably darker and more olivaceous below and have smaller caps than four from Zaruma, Ecuador.

La Candela, 1; El Roble, 1; Fusugasugá, 1.

(2366) **Siptornis erythrops griseigularis** (*Ridgw.*).

Acrorchilus erythrops griseigularis Ridgw., Proc. Biol. Soc. Wash., XXII, 1909, p. 72 (San Antonio, Col.).

Synallaxis erythrops Scl. & Salv., P. Z. S., 1879, p. 521 (Frontino).

Siptornis erythrops griseigularis Hellm., P. Z. S., 1911, p. 1149 (Pueblo Rico; Siató; Loma Hermosa.)

Inhabits the Subtropical Zone of the Western Andes. An immature bird from Ricaurte has the middle pair of tail feathers chiefly of the color of the back and, therefore, approaches the Ecuadorian *erythrops*, of which I have no specimens. This specimen is in the plumage of the type of *S. e. rufigenis,* having the superciliary, sides of the head and underparts rich ochraceous.

San Antonio, 5 (topotypes); Gallera, 1; Ricaurte, 1.

(2367) **Siptornis striaticollis** (*Lafr.*).

Synallaxis striaticollis Lafr., Rev. Zool., 1843, p. 290 (Bogotá — type examined).

Inhabits the subtropical slopes above the Magdalena Valley. A specimen from La Palma is decidedly more fulvous below than one from Fusugasugá and two Bogotá skins. Doubtless this interesting little species will some day be generically separated from *Siptornis.*

La Palma, 1; Fusugasugá, 1.

(2401) **Siptornis flammulata multostriata** (*Scl.*).

Synallaxis multostriata Scl., P. Z. S., 1857, p. 273 ('Bogotá').

Choachí, 1.

(2401*a*) **Siptornis flammulata quindiana** *Chapm.*

Siptornis flammulata quindiana Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 643 (Paramo of Sta. Isabel, Cen. Andes, Col.).

Char. subsp.— Similar to *S. f. flammulata* (Jard.) of Ecuador but upperparts browner, the front part of the crown richer and deeper in tone, hazel rather than ochraceous-tawny, with, as a rule, the shaft-streaks broader, the margins correspondingly narrower; superciliary ochraceous and less clearly defined; throat deeper in tone, ochraceous-buff rather than buff, its color spreading to the breast, the sides of the head and auricular region; flanks and abdominal-region more ochraceous. Differs from *S. f. multostriata* (Scl.) of the Bogotá region, in being less heavily margined with black below, the margins more even in outline, the throat-patch much larger and paler, the upperparts browner, the frontal region less chestnut and less distinctly streaked.

Occupies the Paramo Zone of the Central Andes.

Paramo of Santa Isabel, 15.

(2408) **Pseudocolaptes boissonneauti boissonneauti** (*Lafr.*).

Anabates boissonneauti Lafr., Rev. Zool., 1840, p. 104 (Bogotá).

Pseudocolaptes boissonneauti Scl. & Salv., P. Z. S., 1879, p. 521 (Frontino; Sta. Elena).

Ranges from the higher parts of the Subtropical Zone through the Temperate Zone in all three ranges. Immature birds have the head black, unstreaked.

La Florida, 3; Cerro Munchique, 3; Andes w. of Popayan (10,340 ft.), 3; Almaguer, 2; Laguneta, 4; Santa Isabel (12,000 ft.), 2; Sta. Elena, 1; La Candela, 1; El Roble, 1.

(2437) **Hyloctistes subulatus subulatus** (*Spix*).

Sphenura subulata Spix, Av. Bras., 1, p. 82, pl. lxxxiii, fig. 1, 1824 ("in sylvis flum. Amazonum").

A single specimen from Florencia represents this form of which I have no other examples.

Florencia, 1.

(2438) **Hyloctistes subulatus assimilis** (*Berl. & Tacz.*).

Automolus assimilis Berl. & Tacz., P. Z. S., 1883, p. 561 (Chimbo, Ecuador).

Hyloctistes subulatus assimilis Hellm., P. Z. S., 1911, p. 1150 (Sipi; Noanamá; Tadó).

Inhabits the Tropical Zone of the Pacific coast. Our ten specimens differ from a single specimen of what I assume to be *H. s. subulatus* in their deeper, more olivaceous underparts and the absence of shaft-streaks in the crown and foreback.

Juntas de Tamaná, 1; Nóvita, 2; Barbacoas, 6; Buenavista, Nariño, 1.

(2434) **Automolus holostictus** *Scl. & Salv.*

Automolus holostictus Scl. & Salv., P. Z. S., 1875, p. 542 (Frontino, Col.); *Ibid.*, 1879, p. 522 (Sta. Elena).

Inhabits the Subtropical and Temperate Zones. Our specimens of this species were taken in the Central and Eastern Andes.

Accepting Wied's "*Anabates leucopthalmus*" as the type of *Automolus* it is clear that the present species is not properly referable to that genus. Its affinities appear rather to be with *Thripadectes*. As in similar cases, where generic separation should, in my opinion, be based only on a study of all the species concerned, I follow Brabourne and Chubb's list.

Salento, 1; Sta. Elena, 5; above Ibagüe, 1; Choachi, 1.

(2435) **Automolus ignobilis** *Scl. & Salv.*

Automolus ignobilis Scl. & Salv., P. Z. S., 1879, p. 522 (Frontino, Antioquia).

A male from Cocal and a female from Cerro Munchique indicate that this species (which, obviously, is far from being a true *Automolus*) inhabits the Subtropical Zone of the Western Andes. We have not found it elsewhere.

Cocal, 1; Cerro Munchique, 1.

(2436) **Automolus melanorhynchus** (*Tsch.*).

Anabates melanorhynchus Tsch., Arch. für Naturg., 1844, I, p. 295 (Peru).

Represented only by a single specimen collected at Buena Vista, above Villavicencio. I have no material for comparison.

Buena Vista, 1.

(2441) **Automolus ochrolæmus turdinus** (*Pelz.*).

Anabates turdinus Pelz., Sitz. Akad. Wien, XXXIV, 1859, p. 110 (Rio Negro).

Found by us only in the Tropical Zone at the eastern base of the Eastern Andes. Hellmayr (Nov. Zool., XIV, 1907, p. 365) refers Bogotá birds to the form here given. I have no material for comparison.

Buena Vista, 4; Villavicencio, 1.

(2445) **Automolus dorsalis** *Scl. & Salv.*

Automolus dorsalis Scl. & Salv., P. Z. S., 1880, p. 158 (Sarayacu, Ecuador).

Two specimens from La Morelia and one from Florencia agree with two from Zamora near the type-locality. A third Zamora specimen has the superciliaries and nuchal region ochraceous and the underparts are washed with this color. It agrees more nearly with the description of the type but is evidently immature.

La Morelia, 2; Florencia, 1.

(2445*a*) **Automolus pallidigularis pallidigularis** *Lawr.*

Automolus pallidigularis Lawr., Ann. Lyc. N. H. N. Y., VII, 1862, p. 465 (Lion Hill, Panama); Scl. & Salv., P. Z. S., 1879, p. 522 (Remedios).

Inhabits the Tropical Zone in Antioquia and the Magdalena Valley. It has been recorded from northwestern Ecuador (Hart., Nov. Zool., 1901, pp. 369, 241) as *A. p. albidior,* an apparently invalid form, but is unknown from the Pacific coast of Colombia.

Our specimens, particularly those from Malena and Honda, are less rufous above, less ochraceous below, and have the throat whiter than the type, but differ little from east Panama (Tacarcuna) specimens.

Puerto Valdivia, 2; Malena, 2; Honda, 1.

(2447) **Automolus infuscatus infuscatus** (*Scl.*).

Anabates infuscatus Scl., Ann. & Mag. N. H. (2), XVII, 1856, p. 468 (eastern Peru).

Three specimens from La Morelia and two from Florencia differ from two specimens of *A. cervicalis* (Scl.) from La Union, Caura River, Venezuela (= *Automolus sclateri* in part of authors; see Hellm., Nov. Zool. XIII, 1906, p. 335), having the upperparts more olivaceous. I have no Peruvian specimens for comparison.

La Morelia, 3; Florencia, 2.

(2450*a*) **Automolus nigricauda saturatus** *Chapm.*

Automolus nigricauda saturatus Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 644 (Alto Bonito, Antioquia, Col.).

Char. subsp.— Similar to *A. n. nigricauda* Hart. but very much darker; the back deep blackish bay instead of between raw-umber and mummy-brown, the crown and nape only slightly darker than the back, with more of a claret-brown tinge, which is clearer on the sides of the head; wings externally of the same color as the back, tail black; breast somewhat deeper than in *nigricauda* the rest of the underparts darker brown, less olivaceous, the sides and particularly flanks much darker, nearly the color of the back.

Inhabits the Tropical Zone in the lower Atrato Valley and northward to eastern Panama.

Alto Bonito, 5.

(2454) **Automolus cinnamomeigula** *Hellm.*

Automolus cinnamomeigula HELLM., Bull. B. O. C., XV, 1905, p. 55 ('Bogotá' — I propose La Morelia, alt. 600 ft., Rio Bodaquera, Caquetá, Col.).

This species appears to be the Amazonian representative of *A. n. nigricauda* Hart., from which, however, it differs materially in its rufous tail, browner upperparts, more ochraceous belly, etc. I have not seen the type in the Museum at Tring.

Two females and a male from La Morelia.

(2463*b*) **Philydor rufipileatus consobrinus** *Scl.*

Philydor consobrinus SCL., P. Z. S., 1870, p. 328 ("Bogotá"; I propose Villavicencio).

Philydor rufipileatus consobrinus HELLM., Verh. Ges. Wien., 1908, p. 220.

Found only in the Tropical Zone at the eastern base of the Eastern Andes.

I have no specimens of true *rufipileatus* and follow Hellmayr (*l. c.*) in the arrangement of names given above.

Villavicencio, 8.

(2464) **Philydor pyrrhodes** (*Cab.*).

Anabates pyrrhodes CAB., in Schomb. Reise Guiana, 1848, p. 689 (British Guiana).

A specimen from La Morelia adds this species to the known fauna of Colombia. It agrees essentially with specimens from Napo and the foot of Mt. Duida.

La Morelia, 1.

(2468) **Philydor ruficaudatus** (*d'Orb. & Lafr.*) subsp.

Anabates ruficaudatus D'ORB. & LAFR., Syn. Av., II, 1838, p. 15 (Yuracares, Bolivia).

Two specimens from La Morelia, evidently represent this species and are doubtless separable from it, but my material is not sufficiently satisfactory to warrant this step. They are decidedly darker, less olive above than a specimen from near the junction of the Gy-Parana and Madeira rivers, and less buffy below than three specimens from Zaruma, Ecuador, which I assume are *Philydor subfulvus* Scl. These Zaruma birds, however, seem to be only subspecifically distinct from *ruficaudatus*, nevertheless

Sclater records (Cat. B. M. XV, p. 101) both *ruficaudatus* and *subfulvus* from Gualaquiza, essentially the locality in which our Zaruma specimens were taken. I do not, therefore, feel that I am in a position to separate the Colombian bird without having seen authentic specimens of both *ruficaudatus* and *subfulvus*.

La Morelia, 2.

(2473) **Philydor montanus striaticollis** (*Scl.*).

Anabates striaticollis Scl., P. Z. S., 1857, p. 17 ('Bogotá' — I suggest Fusugasugá).

Inhabits the Subtropical Zone of all three ranges. Specimens from the mountains about the Cauca Valley average deeper in color below; and thus more nearly resemble *P. m. anxius* (Bangs) of Santa Marta than do those of the Bogotá region. The Santa Marta form, however, is less rufous above and has the throat fulvous. The Peruvian form, *P. m. montanus*, is decidedly more rufous above than *striaticollis* and has the crown rufous but little darker than the back, instead of olivaceous, distinctly unlike the back.

Las Lomitas, 2; San Antonio, 4; Miraflores, 7; Salento, 2; La Sierra, 2; near San Agustin, 1; La Candela, 7; Fusugasugá, 1; Aguadita, 1; El Roble, 1.

(2477) **Thripadectes flammulatus** (*Eyton*).

Anabates flammulatus Eyton, Cont. Orn., 1849, p. 131 (Bogotá).
Thripadectes flammulatus Scl. & Salv., P. Z. S., 1879, p. 521 (Frontino); Allen, Bull. A. M. N. H., XIII, 1900, p. 158 (El Libano).

We have met with this species only in the Temperate Zone of the Central Andes.

Laguneta, 2.

(2480) **Thripadectes virgaticeps sclateri** *Berl.*

Thripadectes sclateri Berl., Proc. IV Int. Cong., 1905, p. 365, 1907 (St. Pablo, w. Colombia, 4500 ft.); Hellm., P. Z. S., 1911, p. 1149 (Crit.).
Rhopoctites alogus Bangs, Proc. Biol. Soc. Wash., XXIII, 1910, p. 72 (Pavas, w. Colombia, 440 ft.). Type examined.

Inhabits the Subtropical Zone of the Western Andes. Hellmayr's (*l. c.*) statement that *Rhopoctites alogus* Bangs is identical with this species, is confirmed by the examination of Bangs' type. Comparison with the type of *Thripadectes virgaticeps* Lawr., further indicates that *sclateri* is a subspecies of that form. The differences between the two consist only of size and intensity of coloration, *virgaticeps* being larger and with the back and underparts more suffused with rufous. In pattern of coloration, that is, width of shaft-streaks, markings of throat, etc., the two forms are exactly alike.

Lawrence's type is a trade skin labelled "Quito" and hence may have come from the Subtropical Zone of either the eastern or western slope of the Ecuadorian Andes. A specimen collected by Richardson at Ricaurte (5000 ft.) in extreme southwestern Colombia suggests that the latter slope may be the true type-locality. It is nearer to *virgaticeps* than to *sclateri* in size, agrees with the latter in the color of the upperparts, but below is less richly colored than either of the other two. Nevertheless, I am inclined to the belief that it is an actual intermediate between them. I append measurements of all the specimens in our collection, including two of *Thripadectes rufobrunneus* (Lawr.) which appears to be a northern representative of the group.

	Sex	Wing	Tail	Culmen
T. v. virgaticeps (type) 'Quito'	♀	104.5	92	28
T. v. sclateri, Ricaurte, Col.	♀	100	95	27
" " " San Antonio, Col.	♂	95	90	25.5
" " " " " "	♂	97	94	26
" " " " " "	♂	95	92.5	26
" " " Salencio, "	♀	95	90	26
T. rufobrunneus, Costa Rica	?	91	90	23
" " Irazu, Costa Rica	♂	90	89	24

(2481) **Ancistrops strigilatus** (*Spix*).

Thamnophilus strigilatus Spix, Av. Bras., 1825, p. 26, pl. xxxvi, fig. 1 (e. Peru).

A single specimen from La Morelia adds this species to the recorded fauna of Colombia.

La Morelia, 1.

(2487) **Xenicopsis subalaris subalaris** (*Scl.*).

Anabates subalaris Scl., P. Z. S., 1859, p. 141 (Pallatanga, Ecuador).

Xenicopsis subalaris subalaris Hellm., P. Z. S., 1911, p. 1151 (Loma Hermosa, W. Andes).

Xenicopsis subalaris columbianus Chapm., Bull. A. M. N. H., XXXI, 1912, p. 150 (Miraflores, Cen. Andes).

Inhabits the Subtropical Zone of the western Andes and western slope of the Central Andes. The receipt of additional material from southern Ecuador (six specimens from Zaruma) shows beyond question that my proposed separation of the west Colombian bird (*l. c.*) was not warranted by the facts in the case.

La Frijolera, 1; Salencio, 1; Las Lomitas, 2; San Antonio, 1; Cerro Munchique, 1; Gallera, 1; Miraflores, 2.

(2487*a*) **Xenicopsis subalaris mentalis** (*Tacz. & Berl.*).

Anabazenops mentalis Tacz. & Berl., P. Z. S., 1885, p. 96 (Machay, e. Ecuador).

Three specimens from the Subtropical Zone above the Magdalena Valley and one from Buena Vista appear to be referable to this form to which Hellmayr (P. Z. S., 1911, p. 1151) refers Bogotá specimens. The intermediate characters shown by one of the La Candela examples indicate the probability of complete intergradation with true *subalaris*. From that form *mentalis* may be known by its blacker head, darker, more olivaceous back, the generally broader shaft-streaks of the upperparts which extend well down the back, while the streaks on the underparts reach posteriorly to the ventral region.

La Candela, 2; Fusugasugá, 1; Buena Vista, 1.

(2490) **Xenops genibarbis littoralis** *Scl.*

Xenops littoralis Scl., P. Z. S., 1861, p. 379 (Esmeraldas, Ecuador).
Xenops genibarbis Scl. & Salv., P. Z. S., 1879, p. 523 (Remedios).
Xenops genibarbis littoralis Hellm., P. Z. S., 1911, p. 1152 (Noanamá; Tadó).

Inhabits the Tropical Zone of the Pacific coast eastward through Antioquia to the Magdalena Valley and up the Cauca to the Cauca Valley. The Malena specimen agrees with west Ecuador birds. We have not met with true *genibarbis*.

Nóvita Trail (4000 ft.), 1; Buenaventura, 1; Barbacoas, 1; Rio Frio, 2; Puerto Valdivia, 2; Malena, 1.

(2493) **Xenops rutilus heterurus** *Cab. & Hein.*

Xenops heterurus Cab. &. Hein., Mus. Hein., II, 1859, p. 33 (Colombia).
Xenops rutilus Wyatt, Ibis, 1871, p. 331 (Canta); Scl. & Salv., P. Z. S., 1879, p. 522 (Sta. Elena); Allen, Bull. A. M. N. H., XIII, 1900, p. 158 (Las Nubes).

Inhabits the Subtropical Zone of all three ranges. True *rutilus*, as represented by a series from Chapada, Matto Grosso, is brighter above, more broadly striped below and has only one pair, instead of two pairs of rectrices with the inner web largely black (*Cf.* Hellm. Nov. Zoöl., XV, 1908, p. 62).

San Antonio, 1; Cerro Munchique, 1; Miraflores, 3; Salento, 2; Sta. Elena, 3; Rio Toché, 2; San Agustin, 1; Fusugasugá, 2; El Roble, 2.

(2499) **Sclerurus brunneus** *Scl.*

Sclerurus brunneus Scl., P. Z. S., 1857, p. 17 ('Bogotá').

Met with only in Amazonian Colombia. Doubtless, as Hellmayr states (Nov. Zool., XIV, 1907, p. 58), a representative of *S. caudacutus.*

La Morelia, 4; Florencia, 1.

(2501) **Sclerurus albigularis albigularis** *Swainson.*

Sclerurus albigularis Swainson, Birds of Brazil, 1841, pl. 78 (——?); Scl. & Salv., P. Z. S., 1868, p. 630 (Caracas).

Seven specimens from Buena Vista, above Villavicencio, agree closely with seven from Cristobal Colon on the Paria Peninsula, and are doubtless, therefore, typical of this species for which, following Hellmayr (Nov. Zool., XIII, 1906, p. 28), I accept Sclater and Salvin as the describers and Caracas as the type-locality. Four Trinidad specimens are smaller, with shorter bills, and average brighter above.

Buena Vista, 7.

(2504) **Sclerurus mexicanus obscurior** *Hart.*

Sclerurus mexicanus obscurior Hart., Nov. Zool., VIII, 1901, p. 370, (Lita, n. w. Ecuador).

?Sclerurus caudacutus Scl. & Salv., P. Z. S., 1879, p. 520 (Frontino).

Sclerurus mexicanus andinus Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 622 (Buena Vista, Col.).

Found, with one exception, in the Subtropical Zone of the Western and Eastern, and doubtless also, the Central Andes. Specimens collected by Miller and Boyle on the Western Andes are not separable from Buena Vista specimens and in connection with three recently acquired birds from Tacarcuna indicate that although the eastern birds average lighter in color than the western ones, there is but one valid form of this species in Colombia.

For this I accept the name applied by Hartert to the Ecuador race. Of this I have but one specimen. It has the rump duller than the remaining birds in the series, but this, Hartert's description leads me to believe, is not a constant character.

As a whole these birds chiefly differ from true *mexicanus* in being darker above, with the rump deeper, the abdomen and especially lower tail-coverts less rufous.

Specimens of *S. m. pullus* are not now available for comparison but in view of the individual variation to which this species is subject, it is evident that they are very close to *S. m. obscurior*.

Puerto Valdivia, 1; La Frijolera, 1; San Antonio, 1; Buena Vista, 3.

(2508) **Margarornis perlata** (*Less.*).

Sittasomus perlatus Less., Echo du Monde Sav., 1844, p. 275 ('Bogotá'; I propose El Piñon, above Fusugasugá, alt. 9600 ft.).

Margarornis perlata Scl. & Salv., P. Z. S., 1879, p. 523 (Sta. Elena).

Common in the Temperate Zone of all three ranges. Specimens from the Central and Western Andes average somewhat yellower below than those from the Bogotá region and thus show a slight approach toward *M. squamigera*. Old Bogotá skins are paler and hence brighter above and less olivaceous below than our recently collected ones.

Cerro Munchique, 8; Almaguer, 5; Valle de las Pappas, 6; Laguneta, 6; Santa Isabel, 5; El Piñon, 3.

(2509) **Margarornis stellata** *Scl. & Salv.*

Margarornis stellata Scl. & Salv., Nomen. Av. Neotrop., 1873, p. 160 (Quito).

A specimen from the Nóvita Trail (7000 ft.) and one from San Antonio, indicate that this is a species of the Subtropical Zone of the Western Andes. It appears to have been recorded, heretofore, only from western Ecuador, whence I have seen no specimens.

Nóvita Trail (7000 ft.), 1; San Antonio, 1.

(2511) **Premnornis guttata** (*Lawr.*).

Margarornis guttata Lawr., Ann. Lyc. N. Y., VIII, 1867, p. 168 (Quito).

Our seven specimens represent localities in the Subtropical Zone of all three ranges. Immature specimens from San Antonio and Fusugasugá agree with Lawrence's type, which is in similar plumage. I have no other Ecuador specimens.

San Antonio, 3; La Candela, 1; La Palma, 1; Aguadita, 2.

(2512) **Premnoplex brunnescens brunnescens** (*Scl.*).

Margarornis brunnescens Scl., P. Z. S., 1856, p. 27, pl. cxvi ('Bogotá'; I suggest Aguadita above Fusugasugá, alt. 6500 ft.); Scl. & Salv., P. Z. S., 1879, p. 523 (Sta. Elena).

Common in the Subtropical Zone of all three ranges. Specimens from the Central and Western Andes average somewhat darker below than those from the Bogotá region; some of them closely approaching Santa Marta specimens of *P. b. coloratus* Bangs.

Las Lomitas, 1; San Antonio, 2; Cocal, 2; Cerro Munchique, 4; Gallera, 1; La Florida, 1; Miraflores, 2; Salento, 3; La Palma, 1; Aguadita, 1; Buena Vista, 5.

(2516) **Glyphorhynchus cuneatus** subsp.

Dendrocolaptes cuneatus Licht., Abh. Akad. Berl., 1820, p. 204 (Bahia).

A specimen from Villavicencio cannot be satisfactorily referred to any of the recognized forms of this species. It has the throat ochraceous-buff, with barely perceptible margins, and is thus unlike true *cuneatus* in which the throat is but faintly tinged with buff and distinctly margined. The underparts have a more olivaceous cast than in the other forms. Identification of this specimen would not alone require additional examples from Villavicencio, but a revision of the entire group, which appears, from a casual examination of the specimens in our collection, to contain several undescribed forms.

Villavicencio, 1.

(2517) **Glyphorhynchus cuneatus castelnaudi** *Des Murs.*

Glyphorhynchus castelnaudi Des Murs, Voy. Casteln. Ois., 1855, p. 47, pl. xv, fig. 2, (Santa Maria, Peru).

Seven specimens from the Tropical Zone in Amazonian Colombia, agree essentially with one from Pebas, Peru, and are apparently, therefore, typical. Together with four specimens from the foot of Mt. Duida they possess the cinnamon-rufous throat which characterizes this form.

Florencia, 4; La Morelia, 3.

261

(2517*a*) **Glyphorhynchus cuneatus pectoralis** *Scl. & Salv.*

Glyphorhynchus pectoralis Scl. & Salv., P. Z. S., 1860, p. 299 (Choctúm, Vera Paz, Guatemala).

?*Glyphorhynchus cuneatus* Wyatt, Ibis, 1871, p. 331 (Canuto); Scl. & Salv., P. Z. S., 1879, p. 523 (Remedios).

Glyphorhynchus cuneatus castelnaudi Hellm., P. Z. S., 1911, p. 1152 (Noanamá).

Seventeen specimens from the Tropical Zone of the Pacific coast agree, on the whole, with six specimens from Panama to Mexico and differ from twelve specimens of *castelnaudi* in having the feathers of the throat ochraceous-buff rather than cinnamon-rufous and, as a rule, with more evident blackish margins. Two specimens from Gallera (5700 ft.) in the Subtropical Zone, are more olivaceous below and less rufous above than those from the coast region.

Alto Bonito, 3; Chocó, 1; Salaqui, 1; Noanamá, 1; San José, 2; Gallera, 2; Cocal, 1; Barbacoas, 4; Buenavista, Nariño, 2; Puerto Valdivia, 1.

(2519) **Dendrocincla tyrannina tyrannina** (*Lafr.*).

Dendrocops tyranninus Lafr., Rev. Zool., 1851, p. 328 (Bogotá).
Dendrocincla tyrannina Scl. & Salv., P. Z. S., 1879, p. 523 (Sta. Elena).

Found by us in the Temperate Zone of the Western and Central Andes and in the upper part of the Subtropical Zone of the last-named range. Six specimens are less rufous than an old Bogotá skin, a difference doubtless due to fading of the Bogotá bird.

Cerro Munchique, 1; Almaguer, 1; Salento, 1; Laguneta, 1; El Eden, 1.

(2521) **Dendrocincla lafresnayei lafresnayei** *Ridgw.*

Dendrocincla lafresnayei Ridgw., Proc. U. S. N. M., X, 1887, p. 492 ("Upper Amazon?" — locality doubtless incorrect; Hellmayr substitutes "Colombia" — I suggest adding Valparaiso, Santa Marta).

Dendrocincla olivacea lafresnayi Allen, Bull. A. M. N. H., XIII, 1900, p. 156 (Minca; Onaca; Las Nubes; Valparaiso; Palomina; Chirua; La Concepcion; Santa Marta).

Dendrocincla meruloides lafresnayei Hellm., P. Z. S., 1911, p. 1155 (Noanamá; Sipi).

Dendrocincla lafresnayei inhabits the Tropical Zone of Colombia west of the Eastern Andes. Specimens from the Cauca Valley (Rio Frio) agree with one from Honda and with seven from Santa Marta, but four specimens from the Pacific coast (Nóvita to Barbacoas) are perceptibly darker both above and below. Nine specimens from western Ecuador (Manavi) agree with Santa Marta specimens in color, but have the bill blacker; a difference due, in part, but not wholly to the fact that they were collected more recently.

Possibly the variations exhibited by these twenty-two specimens may be in a measure racial, but I see nothing to be gained by applying names to differences so minute that their subsequent application becomes largely a matter of opinion. I have, for example, a specimen of this species from Panama which can be matched by several specimens in the series under consideration, which Lawrence, Sclater, Ridgway, Oberholser, and Chapman have each determined differently! Allen, Ridgway, Hellmayr and Oberholser agree in referring Santa Marta specimens to this form, and in default of a more definite place it may be well to accept Valparaiso, Santa Marta, as the type-locality.

Nóvita, 2; Baudo, 1; Barbacoas, 1; Puerto Valdivia, 1; Rio Frio, 2; Honda, 1.

(2526) **Dendrocincla lafresnayei phæochroa** *Berl. & Hart.*

Dendrocinda [sic] *phæochroa* Berl. & Hart., Nov. Zool., IX, 1902, p. 67 (Munduapo, Orinoco).

To this form I refer three specimens from Villavicencio. They agree essentially with five specimens from the middle and upper Orinoco but the throat is not quite so pale. They vary markedly in size but the largest about equals average specimens of *phæochroa.*

Villavicencio, 3.

(2539) **Xiphorhynchus guttata guttatoides** (*Lafr.*).

N[asica] guttatoides Lafr., Rev. et Mag. de Zool., 1850, p. 387 (Loreto, Peru).

A specimen from Florencia agrees with a 'Napo' and also a 'Bogotá' specimen, both localities whence Hellmayr (Nov. Zool., XIV, 1907, p. 59) records this form.

Florencia, 1.

(2542) **Xiphorhynchus æquatorialis æquatorialis** (*Berl. & Tacz.*).

Dendrornis erythropygia æquatorialis Berl. & Tacz., P. Z. S., 1883, p. 563 (Chimbo, alt. 1000 ft., w. Ecuador).

Dendrornis triangularis æquatorialis Hellm., P. Z. S. 1911, p. 1153 (Nóvita; El Tigre, 320 ft.)

Inhabits the Tropical Zone of the Pacific slope and eastward into Antioquia. Our specimens have been compared with a series from western Ecuador. The occurrence of typical specimens of *X. triangularis* at Cocal on the western slope of the Western Andes at an altitude of 4000 feet (the lower border of the Subtropical Zone) in connection with the constancy in color maintained by that species throughout its wide range, induces me to believe that it does not intergrade with *æquatorialis.* The differences between the two species, described by Hellmayr (*l. c.*) are shown by our large series of both forms.

Xiphorhynchus æquatorialis insolitus[1] (Ridgw.) of which I have examined the type and a specimen from the Rio Truando, is more deeply colored than any of our Colombian specimens (though approached by one from Baudo and another near Quibdó) and appears to be more unlike *æquatorialis* than is the more northern *punctigula* (Ridgw.), some specimens of which are very close to *æquatorialis*.

Near Quibdó, 1; Baudo, 1; San José, 1; Barbacoas, 4; Buenavista, Nariño, 1; La Frijolera, 1.

(2543) **Xiphorhynchus triangularis** (*Lafr.*).

Dendrocolaptes triangularis Lafr., Rev. Zool., 1842, p. 134 (Bogotá; *cf.* Hellmayr, P. Z. S., 1911, p. 1153).

Dendrornis triangularis Scl. & Salv., P. Z. S., 1879, p. 523 (Sta. Elena).

Common in the Subtropical Zone of all three ranges. I detect practically no racial variation in our series of forty-eight specimens, though those from the Western and Central Andes may average slightly more rufescent above. The white area along the cutting-edge of the central part of the maxilla to which Hellmayr (P. Z. S., 1911, p. 1154) calls attention is present in all but five of our specimens. Two of these are from Cocal, one from Anolaima, near Bogotá, one from Fusugasugá, and one from Buena Vista. I do not regard the absence of this character in the Cocal birds as indicating intergradation of *triangularis* with *æquatorialis*, which doubtless occurs at a few hundred feet below Cocal. In other respects these two Cocal birds are typical *triangularis* having the throat feathers margined or ringed in squamate pattern, the crown with shaft-streaks. Furthermore, in three other specimens from Cocal the whitish mark on the maxilla is conspicuous, while its absence in specimens from the Bogotá region shows that it is not a constant character.

Las Lomitas, 3; San Antonio, 1; Cerro Munchique, 1; Cocal, 5; Miraflores, 3; Salento, 3; Laguneta, 1; El Eden, 1; La Candela, 13; La Palma, 3; near San Agustin, 1; Andalucia, 3; Fusugasugá, 2; Aguadita, 4; Anolaima, 1; Buena Vista, 3.

(2544) **Xiphorhynchus lachrymosus lachrymosus** (*Lawr.*).

Dendrornis lachrymosus Lawr., Ann. Lyc. N. H. N. Y., VII, 1862, p. 467 (Panama, type examined).

Xiphorhynchus lacrymosus rostratus Ridgw., Proc. Biol. Soc. Wash., XXII, 1909, p. 73 (Rio Dagua).

Dendrornis lachrymosa rostrata Hellm., P. Z. S., 1911, p. 1153 (Condoto; Noanamá).

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[1] Bull. U. S. N. M., 50, V, 1911, p. 257 (Coclé, e. Panama).

Inhabits the Tropical Zone of the Pacific coast. After comparison of our Colombian series with four Panama specimens of *lachrymosus*, including the type, I find no ground for the separation of a west Colombian form.

Baudo, 1; Nóvita, 1; Nóvita Trail (2000 ft.), 1; Noanamá, 2; Dabeiba, 2; Alto Bonito, 5; San José, 1; Barbacoas, 4.

Table of Measurements.

	Sex	Wing	Tail	Culmen
Panama	—	119	92	40
"	—	110	92	37
"	—	118	96	40
Truando	♂	113	85	37
Baudo	♀	113	95	35
Noanamá	♂	124–5	102	41
"	♂	126	105	40
Nóvita	♀	119	97	40
San José	♀	115	91	39
Barbacoas	♂	122	97	40
"	♂	118	113	40
"	♂	111	97	40

(2544*a*) **Xiphorhynchus lachrymosus alarum** *Chapm.*

Xiphorhynchus lachrymosus alarum CHAPM., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 642 (Puerto Valdivia, Col.).

Char. subsp.— Similar to *X. l. lachrymosus* (Lawr.), but buffy guttate spots on the back smaller and narrowly margined with black and more widely with Dresden-brown rather than broadly margined with black; spots below averaging smaller; lesser wing-coverts with much less black, the outer greater coverts margined externally with brownish above instead of black.

Inhabits the Tropical Zone of the lower Cauca River and doubtless also the adjoining areas on the Magdalena Valley.

Puerto Valdivia, 12.

(2545*a*) **Xiphorhynchus nanus nanus** (*Lawr.*).

Dendrornis nana LAWR., Ibis, 1863, p. 181 (Lion Hill, Panama; type examined); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 157 (Cacagualito).

Inhabits the Tropical Zone in the Atrato, Cauca, and Magdalena Valleys. Specimens from the Magdalena Valley average paler than those from Rio Frio and the Atrato, but the difference is fully covered by a series of specimens from the Panama Canal Zone, including the type.

Atrato River, 2; Rio Frio, 4; Manuelita, 1; Puerto Berrio, 2; Opon, 1; Honda, 1.

(2553) **Xiphorhynchus insignis** (*Hellm.*).

Dendrornis insignis Hellm., Bull. B. O. C., XV, 1905, p. 56 (Samiria, n. e. Peru).

On comparison with *X. elegans* and *X. occellata* a specimen from Florencia shows the distinguishing features on which this species is based, but two males and a female from Buena Vista are decidedly paler throughout.

Florencia, 1; Buena Vista, 3.

(2559) **Dendroplex picus picus** (*Gmel.*).

Oriolus picus Gmel., Syst. Nat., I, 1788, p. 384 ("Gujanæ arboribus").

Three specimens from Villavicencio agree with two others from Maipures and San Fernando de Atabapo, in having the throat slightly whiter than specimens from Cayenne, British Guiana, Santarem, and Bahia. Possibly the difference may be due to the freshness of the skins, which, in other respects, are typical.

This form appears not to have been previously reported from the Bogotá region, in which, as recorded below, *D. p. picirostris* also occurs.

Villavicencio, 3.

(2561) **Dendroplex picus picirostris** (*Lafr.*).

Dendrocolaptes picirostris Lafr., Rev. Zool., 1847, p. 76 (Rio Hacha, Colombia).

Dendroplex picirostris Wyatt, Ibis, 1871, p. 331 (Santa Marta); Stone, Proc. Acad. N. S. Phila., 1899, p. 306 (Ambalema); Allen, Bull. A. M. N. H., XIII, 1900, p. 157 (Bonda).

Inhabits the arid coastal Zone and southward up the Atrato and Magdalena Valleys. Our seven specimens agree with a large topotypical series from Bonda, near Santa Marta. In this form the bill averages stouter than in *picus* but, aside from the fewer black margins on the feathers of the throat, I observe no constant difference in color between the two forms.

Turbaco, 1; R. Atrato, 2; La Playa, 1; Magangüe, 1; Banco, 2; Puerto Berrio, 2; Malena, 2; Honda and vicinity, 4; Chicoral, 1.

(2570) **Xiphocolaptes promeropirhynchus** (*Less.*).

Dendrocolaptes promeropirhynchus Less., Rev. Zool., 1840, p. 270 (Colombia).

Xiphocolaptes promeropirhynchus Scl. & Salv., P. Z. S., 1879, p. 523 (Sta. Elena; Remedios).

Found only in the Central and Eastern Andes in both the Subtropical and Temperate Zones. Fourteen specimens show much variation in intensity of color and extent of black markings in the underparts, immature birds being apparently more deeply colored and more conspicuously barred and margined with black below.

Salento, 2; Laguneta, 1; Rio Toché, 1; La Candela, 3; La Palma, 1; Fusugasugá, 2; Aguadita, 2; El Piñon, 2; Subia, 3.

(2586) **Picolaptes lacrymiger lacrymiger** (*Des Murs*).

Dendrocolaptes lacrymiger DES MURS, Icon. Orn., 1849, pl. 71 (Bogotá).
Picolaptes lacrymiger WYATT, Ibis, 1871, p. 331 (Ocaña to Bucaramanga); SCL. & SALV., P. Z. S., 1879, p. 524 (Medellin; Sta. Elena; Envigado; Frontino).

Common in the Subtropical Zone of all three ranges. I can detect no racial differences in our series of forty-eight specimens. This constancy of coloration indicates, in my opinion, the specific distinctness of the form (*P. warscewiczi*) found at Ricaurte.

Paramillo Trail, (10,000 ft.), 1; Las Lomitas, 1; San Antonio, 7; Cerro Munchique, 3; Popayan, 1; La Sierra, 2; Almaguer, 3; Miraflores, 5; Salento, 3; Laguneta, 3; Sta. Elena, 2; Rio Toché, 1; La Palma, 1; La Candela, 6; Andalucia (7000 ft.), 1; Aguadita, 2; El Roble, 2.

(2589) **Picolaptes warscewiczi** (*Cab. & Hein.*).

Thripobotus warscewiczi CAB. & HEIN., Mus. Hein., II, 1859, p. 39 (Peru).

A single specimen from Ricaurte agrees with three others from Gualea, Ecuador. All differ from a specimen from Yungas, Bolivia, in being slightly darker, more rufous above and in having the ground color below slightly brighter, the stripes narrower and more fulvous. From *P. lacrymiger* the Ricaurte and Ecuador specimens differ in being darker, more rufescent above and below with the stripes of the underparts narrow, more linear, less guttate in form and more fulvous in color. In pattern the Ricaurte and Gualea specimens more nearly resemble *P. l. sanctæ-martæ* but the latter has the streaks below much broader and white, and is consequently more like the Bolivia specimen mentioned above.

Ricaurte, 1.

(2594) **Picolaptes albolineatus** (*Lafr.*).

Dendrocolaptes albo-lineatus LAFR., Rev. Zool., 1846, p. 208 ("Colombie ou du Mexique"); SCL. & SALV., P. Z. S., 1879, p. 524 (Remedios; Sta. Elena).
Picolaptes lineaticeps LAFR., Rev. et Mag., 1850, p. 277 (locality unknown).

I accept Lafresnaye's name *albolineatus* for a species of *Picolaptes* which ranges throughout the greater part of the Tropical Zone in Colombia, extends southward into western Ecuador, northward to Panama and eastward at least to Venezuela. After examining Lafresnaye's type in the Paris Museum, Sclater (Cat. Bds. B. M. XV, p. 152) refers 'Bogota' and Antioquia specimens to the species it represents and there can therefore be little doubt that the bird here under consideration is the *Picolaptes albolineatus* of Sclater's monograph. I can, however, detect no difference between Colombia and two Panama R. R. Line specimens which have been compared with the type of *Picolaptes lineaticeps* Lafr. and which differ from it only in having the bill slightly smaller and darker.

If, therefore, the Colombia birds are rightly referred to *albolineatus* it follows that *lineaticeps* is synonymous with that species.

R. Salaqui, 1; Tumaco, 3; Barbacoas, 5; Puerto Valdivia, 2; Rio Frio, 1; Cali, 1; Honda, 4; Buena Vista, 1; Villavicencio, 4.

(2605) **Campylorhamphus trochilirostris procurvoides** (*Lafr.*).

X[iphorhynchus] procurvoides Lafr., Rev. et Mag., de Zool. (2), II, 1850, p. 376 (Cayenne).

I provisionally refer to this form a female from La Morelia which agrees with a specimen from British Guiana in having the back without shaft-streaks. It is, however, paler and more rufescent in color and has the shaft-streaks of crown and breast broader.

La Morelia, 1.

(2606) **Campylorhamphus trochilirostris venezuelensis** (*Chapm.*).

Xiphorhynchus venezuelensis Chapm., Bull. A. M. N. H., II, 1889, p. 156, ex. Lafr. MS. (Venezuela ?).

Xiphorhynchus trochilirostris Scl. & Salv., P. Z. S., 1879, p. 524 (Remedios).

A female from Villavicencio resembles one from Cumanacoa, Venezuela, but is somewhat darker and has the black margins of the crown and throat more pronounced. It differs from the specimen from La Morelia, referred provisionally to *procurvoides,* in the larger white throat area, more streaked breast and dorsal shaft-streaks and darker crown. A male from Alto Bonito is also to be referred to this species.

Alto Bonito, 1; Villavicencio, 1.

(2607) **Campylorhamphus thoracicus** (*Scl.*).

Xiphorhynchus thoracicus Scl., P. Z. S., 1860, p. 277 (Babahoyo, w. Ecuador).

A specimen from Buenavista, Nariño, agrees with specimens from western Ecuador. Two types of coloration are shown by our series of eleven specimens from Esmeraldas, Chone, Naranjo, and Santa Rosa, Ecuador. In one (four specimens) the color, particularly below, is more rufescent and the black markings of the crown and underparts are less pronounced. The other (seven specimens) is more olivaceous, the median stripes of crown and underparts are somewhat paler and their borders blacker. Both types are present at Esmeraldas and both contain representatives of both sexes. The Buenavista specimen belongs to the darker type as does also the specimen from Santa Rosa. The variation appears therefore to be individual.

While doubtless a representative of the *trochilirostris* type this form appears to me to be now specifically distinct. The form of *trochilirostris* (*C. t. procurvoides* or a near ally) nearest to it geographically resembles it least, while the occurrence of *pusillus* at Barbacoas in the same faunal zone as Buenavista, whence comes our Colombian specimen of *thoracicus*, indicates its distinctness from that species.

Buenavista, Nariño, 1.

(2607*a*) **Campylorhamphus pusillus** (*Scl.*).

Xiphorhynchus pusillus [1] SCL., P. Z. S., 1860, p. 278 ("In Nov. Granada int." = Bogotá, *Cf.* Cat. B. M. XV, p. 101); SCL. & SALV., P. Z. S., 1879, p. 524 (Concordia).

?*Campylorhamphus chapmani* RIDGW., Proc. Biol. Soc. Wash., XXII, 1909, p. 74 ("unknown locality").

This well-marked species is typically represented by a specimen from Fusugasugá and by a 'Bogotá' skin. A female from Miraflores in the Central Andes agrees with these skins, but a male which I shot from the same tree is less rufescent and more olivaceous both above and below. A male from Salencio, in the western Andes west of Cartago, is, in general coloration, between the male and female from Miraflores. A male from San Antonio is somewhat more richly colored than the Miraflores male and has the bill stouter. A male from Cocal on the whole resembles the San Antonio bird but has the bill even heavier. A male from Barbacoas has the bill as heavy as that of the Cocal specimen, the plumage is still deeper in tone and the markings on the crown are darker and are reduced to shaft-streaks. Both the characters it exhibits, and the zone it inhabits, indicate that this Barbacoas specimen represents a well-marked race of *pusillus*.

The material at my command does not permit me to reach a satisfactory conclusion concerning the status of this west Colombian form. The case is further complicated by the interesting fact that the Salencio specimen above mentioned, is essentially a duplicate in color and size of the type of *Campylorhamphus chapmani* Ridgw. (Proc. Biol. Soc. Wash., XXII,

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[1] See also Hartert, Nov. Zool., IX, 1902, p. 616.

1909, p. 74). The type of *chapmani* differs only in having the crown and nape somewhat more broadly striped. The latter is without locality but the 'make' of skin resembles that of specimens from Antioquia. If this really be the region whence it came, its identity with the Salencio specimen is explained. It would follow, therefore, that geographically as well as in characters, *chapmani* is intermediate between *pusillus* and the dark coast form represented by the Barbacoas specimen. Whether it may stand for that race or whether, as the two birds from Miraflores indicate, it is not separable from *pusillus* remains to be determined.

Campylorhamphus pusillus is omitted from Brabourne and Chubb's list doubtless through an oversight. Its brownish bill without the reddish tinge shown by members of the *trochilirostris* group, and its cinnamon-buff throat readily serve to distinguish it.

San Antonio, 1; Cocal, 1; Barbacoas, 2; Miraflores, 2; Fusugasugá, 1.

(2611) **Campylorhamphus pucherani** (*Des Murs*).

Xiphorhynchus pucherani Des Murs, Icon. Orn., 1849, pl. 69 (Bogotá).

Apparently a rare species. It is represented only by a male from Cocal. I have no authentic material for comparison.

Cocal, 1.

(2616) **Dendrocolaptes validus validus** *Tsch.*

D[endrocolaptes] validus Tsch., Arch. für Naturg., X, I, 1844, p. 296 ("Waldregion von Peru zwischen 10° und 12° Sude Breite"); Scl. & Salv., P. Z. S., 1879, p. 523 (Concordia; Medellin; Frontino; Sta. Elena); Allen, Bull. A. M. N. H., XIII, 1900, p. 156 (Valparaiso; El Libano; Las Nubes).

In the absence of material typically representing the various races of this species, I provisionally refer our Colombian specimens as above.

The species ranges from the Tropical Zone in Amazonian Colombia to the Subtropical Zone in the Western Andes.

Cerro Munchique, 1; Miraflores, 1; Salento, 2; La Candela, 3; Aguadita, 1; Villavicencio, 1; Florencia, 1.

(2618) **Dendrocolaptes sancti-thomæ sancti-thomæ** (*Lafr.*).

Dendrocops sancti-thomæ Lafr., Rev. et Mag. de Zool., 1852, p. 466 (Santo Tomas, Honduras, *cf.* Ridgw., Bull. U. S. N. M. 50, V, p. 231).

Dendrocolaptes sanctithomæ Wyatt, Ibis, 1871, p. 331 (Naranjo).

Two specimens from Puerto Valdivia appear to be inseparable from three from Nicaragua. They are somewhat more broadly barred below and less barred above, and in one the head is more nearly concolor with the back. In the other, however, the crown is pronouncedly more rufescent than the back. A similar variation is shown in a small series from El Real, eastern Panama, one of which has the crown brightly rufescent, while in another it is nearly like the back. Both are males. I have seen no authentic specimens of *D. s. hesperius* Bangs.

Puerto Valdivia, 2.

(2619) **Dendrocolaptes sancti-thomæ radiolatus** *Scl. & Salv.*

Dendrocolaptes radiolatus Scl. & Salv., P. Z. S., 1867, p. 755 (Yurimaguas, Peru).

A male from Florencia is apparently to be referred to this species which appears not to have been before recorded from Colombia.

Compared with *D. s. sancti-thomæ,* the differences exhibited by this specimen are obviously of only subspecific value.

Florencia, 1.

FAMILY TYRANNIDÆ. TYRANT FLYCATCHERS.

(2637) **Orodynastes striaticollis striaticollis** (*Scl.*)

Tænioptera striaticollis Scl., P. Z. S., 1851, p. 193, pl. xlii (Ecuador).

Inhabits the Paramo Zone of all three ranges. A male from Santa Isabel, apparently in 'first winter' plumage, has only an incomplete terminal tail-band. In other respects our specimens agree essentially with others from Ecuador.

Paramillo, 1; Santa Isabel, 1; 'Fómeque,' 1.

(2647) **Ochthodiæta fumigata** (*Boiss.*).

Tyrannula fumigatus Boiss., Rev. Zool., 1840, p. 71 (Bogotá).
Ochthodiœta fumigata Scl. & Salv., P. Z. S., 1879, p. 511 (Sta. Elena).

Restricted to the Temperate Zone where it is of evidently local occurrence in all three ranges. It was not common at Laguneta in the Central Andes, and we did not encounter it at all in the Bogotá region where, however, we secured three skins with data from a local collector, taken at Choachi, about twenty miles northeast of Bogotá and north of Chipaque.

Old 'Bogotá' and old 'Quito' skins show a much redder tone than fresh ones from these localities, the former being mummy-brown, the latter sepia above.

Andes w. of Popayan (alt. 10340 ft.), 1; Almaguer, 1; Laguneta, 5; Santa Isabel, 2; Choachi, 3.

(2652) **Ochthœca œnanthoides fumicolor** *Scl.*

Ochthœca fumicolor Scl., P. Z. S., 1856, p. 28, pl. 117 (Bogotá).

Common about the borders of scrubby growth in the Temperate Zone of the Eastern Andes. Old Bogotá skins fairly represent the species.

Choachi, 2; Chipaque, 12; El Piñon, 2; Palo Hueco, 1; La Mar, 2; Pradera, 1.

(2654) **Ochthœca œnanthoides brunneifrons** *Berl. & Stolz.*

Ochthœca œnanthoïdes brunneifrons Berl. & Stolz., P. Z. S., 1896, p. 355 (Maraynioc, cen. Peru).

Ochthœca fumicolor Scl. & Salv., P. Z. S., 1879, p. 511 (Sta. Elena).

One of the most common and characteristic species of the Temperate Zone of the Central and Western Andes.

Specimens taken from November to March are in fresh plumage and are much more richly colored than those taken in September.

Paramillo, 17; Andes w. of Popayan, 1; Valle de las Pappas, 7; Santa Isabel, 13; Sta. Elena, 4.

(2661) **Ochthœca albidiedema** (*Lafr.*).

Setophaga albidiadema Lafr., Rev. Zool., 1848, p. 8 (Colombia).

Represented by only a single specimen taken by Fuertes at Tocaimito near the border of the Temperate Zone and Paramo on the trail between Bogotá and Chipaque.

Tocaimito, 1.

(2662) **Ochthœca frontalis** (*Lafr.*).

Tyrannula frontalis Lafr., Rev. Zool., 1847, p. 70 (Pasto).

Ochthœca frontalis Stone, Auk, 1899, 78 = *Ochthœca citrinifrons* Scl., P. Z. S., 1862, p. 113 (Ecuador).

Represented by only three specimens taken in the Temperate Zone at Santa Isabel in the Central Andes. They agree, essentially with a 'Quito' example.

Sta. Isabel, 3.

(2667) **Ochthœca lessoni** *Scl.*

Ochthœca lessoni Scl., P. Z. S., 1856, p. 28 (Bogotá); Scl. & Salv., *Ibid.*, 1879, p. 511 (Sta. Elena).

Inhabits the Temperate Zone of all three ranges. A satisfactory study of our thirty-six specimens is prevented by the fact that only one of them is from the Bogotá region, the type-locality. This specimen, taken for us by a native collector on May 12, 1913, at Palo Hueco, Cundinamarca, near Bogotá, cannot be matched by any of our thirty-four specimens from the western and central ranges. From more western specimens of the same season it differs in being more olivaceous above, and should the differences exhibited prove constant, the birds of the Central and Western Andes may be separated and with them may probably be placed birds from Ecuador, since a single specimen from Pichincha, while darker, is obviously nearer to west Colombian specimens than to the Bogotá bird.

Comparison of this fresh Bogotá skin with three old 'Bogotá' birds shows a surprising difference in color since the old birds are much ruddier above, the back being snuff-brown, while that of the recently collected skin is olive buffy-brown.

Paramillo Trail (10,000 ft.), 1; Andes, west of Popayan, 10; Laguneta, 15; Almaguer, 3; Valle de las Pappas, 1; Palo Hueco, Cundinamarca, 1.

(2669) **Ochthæca cinnamomeiventris** (*Lafr.*).

Muscicapa cinnamomeiventris Lafr., Rev. Zool., 1843, p. 291 (Colombia).
Ochthœca cinnamomeiventris Scl. & Salv., P. Z. S., 1879, p. 511 (Envigado; Sta. Elena).

This species appears to be found chiefly in the upper part of the Subtropical Zone, since we have failed to secure it at such localities as San Antonio and Miraflores, where our work has been more or less thorough. I can detect no racial differences in our series of fifteen specimens from the three ranges, but comparison of new with old skins from the Bogotá region shows striking differences in color, the old birds being fuscous, the fresh ones slate-black above, and on the breast, while the abdomen in old birds is russet, in fresh ones, it is deep chestnut.

Nóvita Trail (alt. 6000 ft.), 1; Cerro Munchique, 3; Salento, 1; Rio Toché, 1; La Palma, 4; Aguadita, 2; Chipaque, (alt. 8500 ft.), 3.

(2675) **Ochthœca gratiosa gratiosa** (*Scl.*).

Mecocerculus gratiosa Scl., P. Z. S., 1862, p. 113 (Ecuador).

Inhabits the Temperate Zone and upper portion of the Subtropical Zone of all three ranges. Comparison of our specimens with six recently collected birds from Gualea, Ecuador (which are doubtless typical of *gratiosa*) shows that specimens from the Andes west of Popayan are true *gratiosa,* those from the Central Andes differ in having the rufous wing-bars narrower, while two from the vicinity of Bogotá show an appreciable approach toward *Ochthœca gratiosa jesupi* (Allen) (of which we have four specimens, including the type) in their somewhat yellower less olivaceous underparts, less rufescent back, less blackish crown, and particularly, in their more narrowly tipped wing-coverts, the last-named character being barely evident in *jesupi.* Specimens from the Bogotá region are, therefore, intermediate and, though nearer *gratiosa,* indicate probable intergradation with *jesupi.* Old 'Bogotá' skins have the yellow areas paler than in fresh ones, and, it may be added, that an old 'Quito' specimen of *gratiosa,* while paler below, is much more rufescent above than those secured by us at Gualea.

Cerro Munchique, 2; Andes w. of Popayan, 1; Cocal, 3; Almaguer, 2; Laguneta, 4; Sta. Elena, 1.

(2678) **Mecocerculus leucophrys setophagoides** (*Bonap.*).

Tyrannula setophagoides Bonap., Atti Sesta Riun. Sci. Ital. Milan, 1845, p. 405 (Bogotá).

Abundant and conspicuous in scrubby growths in the Temperate Zone of all three ranges. Having no Peruvian specimens I am unable to make comparison with true *leucophrys.* Specimens from the Western and Central Andes average slightly larger, and are perceptibly darker and with the ochraceous wing-markings richer and wider than others from the Bogotá region. They are, however, wholly unlike the brown-backed *Ochthœca rufomarginata* of Lawrence, assuming that the type and one topotype of this species in the American Museum properly represent the species. Consequently, while I agree with von Berlepsch[1] that *rufomarginata* is better placed in *Mecocerculus* than in *Ochthœca,* I cannot believe with Hellmayr[2] that it is subspecifically related to *M. leucophrys.*

Old 'Bogotá' skins are much browner above than the fresh ones obtained by us, and their faded condition, not realized at the time, is responsible for my description of *Mecocerculus nigriceps*[3] from Las Palmales, eastern Venezuela, the type of which agrees closely with the birds collected by us at Chipaque.

Paramillo, 4; Andes west of Popayan, 7; Valle de las Pappas, 7; Laguneta, 3; Santa Isabel, 12; El Piñon, 5; Chipaque, 13.

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[1] Proc. 4th Int. Cong., 1905, 489.

[2] Hellmayr, Archiv. für Naturg., 1912, 74.

[3] Bull. Am. Mus. Nat. Hist., 1899, 154.

(2679) **Mecocerculus stictopterus** (*Scl.*).

Elainia stictoptera Scl., P. Z. S., 1858, p. 554, pl. 146, fig. 2 (Matos, &c.).

Inhabits the Temperate Zone of all three ranges. I have seen no specimens from Ecuador. An old 'Bogotá' skin is somewhat browner than freshly collected ones.

Andes w. of Popayan, 3; Almaguer, 5; Laguneta, 4; Santa Isabel, 1.

(2682) **Mecocerculus pœcilocercus** (*Scl. & Salv.*).

Serpophaga pœcilocerca Scl. & Salv., Nomen. Neotrop., 1873, p. 158 (Puellaro, Ecuador).

Found in small numbers in the upper part of the Subtropical Zone of all three ranges. Our eight specimens show some seasonal variation in the color of the wing-coverts which vary from whitish to buff but on the whole agree with two birds from Gualea, Ecuador, which doubtless typically represent the species.

Cerro Munchique, 2; Salento, 1; El Eden, 1; Aguadita, 1; El Roble, 3.

(2685) **Ochthornis littoralis** (*Pelz.*).

Elainea littoralis Pelz., Orn. Bras., 1869, p. 108 (Borba, Rio Madeira, Brazil).

Two specimens from La Morelia extend the known range of this species to Amazonian Colombia.

(2686) **Fluvicola pica** (*Bodd.*).

Muscicapa pica Bodd., Tabl. Pl. Enl., 1783, p. 42 (Cayenne).

Fluvicola pica Wyatt, Ibis, 1871, p. 332 (Lake Paturia); Robinson, Flying Trip, p. 160 (Barranquilla; R. Magdalena); Allen, Bull. A. M. N. H., XIII, 1900, p. 151 (Cienaga).

Common throughout the Tropical Zone. Doubtless occurring at the eastern base of the Andes, though we did not obtain it there.

Turbaco, 2; Cali, 12; La Manuelita, 3; Rio Frio, 1; Honda, 1; Calamar, 1; La Playa, 1.

(2690) **Arundinicola leucocephala** (*Linn.*).

Pipra leucocephala Linn., Mus. Ad. Frid., II, 1764, p. 33 (Surinam).

Arundinicola leucocephala Wyatt, Ibis., 1871, p. 332 (Lake Paturia; Cienaga).

Our three specimens are evidently far from representing the range of this species, in Western Colombia, but it seems nevertheless to be wanting in the Cauca Valley.

Turbaco, 2; Calamar, 1.

(2714) **Copurus colonus fuscicapillus** *Scl.*

Copurus fuscicapillus Scl., P. Z. S., 1861, p. 381 ("Bogotá" I suggest Villavicencio).

Found only in the Tropical Zone at the eastern base of the Eastern Andes.

Buena Vista, 3; Villavicencio, 4.

(2715) **Copurus leuconotus** *Lafr.*

Copurus leuconotus Lafr., Rev. Zool., 1842, p. 335 ("Habitat in Bolivia" — errore; Hellmayr "substitutes Bogotá, Colombia," I emend to Honda, Colombia); Wyatt, Ibis, 1871, p. 332 (Bucaramanga to Magdalena River up to 3000 ft.); Scl. & Salv., P. Z. S., 1879, p. 511 (Remedios); Hellm., *Ibid.* 1911, p. 1125 (Guineo; Noanamá; Nóvita).

An inhabitant chiefly of the Tropical Zone occurring in the Chocó, on the Pacific coast, and in the upper Magdalena Valley, but we have not taken it in the Cauca Valley. At the eastern base of the Andes it is replaced by *C. c. fuscicapillus.*

Alto Bonito, 3; Nóvita, 2; Noanamá, 1; San José, 4; Los Cisneros, 3; Cerro Munchique (alt. 6000 ft.), 2; Barbacoas, 4; Buenavista, Nariño, 1; Puerto Valdivia, 1; Puerto Berrio, 1; Honda, 5.

(2717) **Machetornis rixosus flavigularis** *Todd.*

Machetornis rixosus flavigularis Todd, Ann. Carn. Mus., VIII, 1912, p. 210 (Tocuyo, Venezuela).

Machetornis rixosus Allen, Bull. A. M. N. H., XIII, 1900, p. 151 (Cacagualito).

This is a bird of the open country which ascends the Magdalena Valley to at least the southern limit of the arid coastal strip, and is also found on the llanos at Villavicencio.

La Playa, 3; lower Magdalena, 1; Villavicencio, 1.

(2719*a*) **Muscisaxicola alpina columbiana** *Chapm.*

Muscisaxicola alpina columbiana Chapm., Bull. A. M. N. H., XXXI, 1912, p. 152 (Paramo of Santa Isabel, Cen. Andes, Col.).

Char. subsp.— Similar to *Muscisaxicola alpina alpina* (Jard.) but averaging slightly smaller, the upperparts darker, more fuscous, the breast grayer.

Five specimens of this form were collected at the type-locality. The genus had not before been recorded from Colombia and its restriction to the Central Andes indicates the close connection which exists between that chain and the main Andean system of Ecuador. *Upucerthia excelsior columbiana* furnishes a similar case.

Santa Isabel, 5.

(2746) **Platytriccus flavigularis** (*Scl.*).

Platyrhynchus flavigularis Scl., P. Z. S., 1861, p. 382 (Bogotá).

Five specimens from the Subtropical Zone of the Central Andes agree with descriptions of this species of which I have seen no authentic specimens.

La Candela, 5.

(2751) **Platytriccus albogularis** (*Scl.*).

Platyrhynchus albogularis Scl., P. Z. S., 1860, p. 68 (Pallatanga, Ecuador); Allen, Bull. A. M. N. H., XIII, 1900, p. 150 (La Concepcion).

Platytriccus mystaceus albogularis Hellm., P. Z. S., 1911, p. 1125 (Pueblo Rico).

Our five specimens are from the Tropical and Subtropical Zones. They are somewhat less richly colored below and less brown above than a series from western Ecuador.

Las Lomitas, 2; La Manuelita, 1; Rio Frio, 1; La Candela, 1.

(2752) **Placostomus coronatus** (*Scl.*).

Platyrhynchus coronatus Scl., P. Z. S., 1858, p. 71 (Rio Napo, e. Ecuador).

Two specimens from La Morelia are doubtless typical of this species which appears not to have been before recorded from Colombia.

La Morelia, 2.

(2755) **Craspedoprion æquinoctialis** (*Scl.*)

Cyclorhynchus æquinoctialis Scl., P. Z. S., 1858, p. 70 (Rio Napo, Ecuador).

Apparently restricted to the Tropical Zone at the eastern base of the Eastern Andes. I have seen no Napo specimens but our four birds are doubtless fairly typical.

La Morelia, 3; Florencia, 1.

(2755*a*) **Craspedoprion pacificus** *Chapm.*

Craspedoprion pacificus Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 174 (Juntas de Tamaná, Col.).

Cyclorhynchus brevirostris Cass., Proc. Acad. N. S. Phila., 1860, p. 144 (R. Truando).

Craspedoprion æquinoctialis Hellm., P. Z. S., 1911, p. 1127 (Nóvita; Noanamá, Col.).

Char. subsp.— Similar to *C. olivaceus* in size but color brighter above, the margins to wing-coverts and inner wing-feathers deeper, more tawny, the breast much darker, the belly deeper yellow.

Appears to be restricted to the Tropical Zone of the Pacific coast.

Alto Bonito, 2; Juntas de Tamaná, 1; Chocó, 1; Nóvita, 1; Barbacoas, 2.

(2756) **Craspedoprion fulvipectus** (*Scl.*).

Cyclorhynchus fulvipectus Scl., P. Z. S., 1860, p. 92 (Nanegal, Ecuador).

Rhynchocyclus fulvipectus Scl. & Salv., P. Z. S., 1879, p. 513 (Frontino).

Our seven specimens are from the Subtropical Zone of the Western and Eastern Andes. Specimens from Ricaurte in southwest Colombia are smaller (males, wing, 73.5 as compared with 78 mm.) than those from the Eastern Andes. A male from Aguadita (above Fusugasugá, alt. 6500 ft.) has the breast much paler than in the remaining birds. I have seen no Ecuador examples.

Ricaurte, 3; Cerro Munchique (6000 ft.), 1; Andalucia, 2; Aguadita, 1.

(2757) **Rhynchocyclus sulphurescens asemus** *Bangs.*

Rhynchocyclus sulphurescens asemus Bangs, Proc. Biol. Soc. Wash., XXIII, 1910, p. 73 (Pavas, alt. 440 ft., W. Andes, Col.).

Four males, one each from Dabeiba, Cali, Rio Frio and Miraflores, agree in color with the type and two other specimens of *asemus*, loaned me by Mr. Bangs, but are smaller, the wing averaging 66.5, the tail 58.5, as compared with wing, 70; tail, 59 in *asemus*.

This form is evidently an offshoot of *sulphurescens* of northern Colombia, and specimens from the middle Magdalena Valley in their grayer crown, are evidently intermediate between it and Santa Marta specimens (*R. s. exortivus* Bangs). Although in its grayer throat and breast it suggests *cinereiceps*, it does not, in my opinion, stand as a connectant between that species and *sulphurescens*, since representatives of both *Rhynchocyclus sulphurescens flavo-olivaceus* Lawr. (Type, Am. Mus. Nat. Hist., No. 42669) and *R. marginatus* Lawr. (Type, Am. Mus. Nat. Hist., No. 42672) were collected by Galbraith on the line of the Panama Railroad. Furthermore, we have a specimen of *R. marginatus* from Nóvita, in the same faunal region as Jimenez (alt. 1600 ft.) whence came two of Bangs' specimens of *asemus*.[1]

The two groups are distinguished chiefly by the yellowish breast and throat and greenish head of *sulphurescens*, and grayish breast, throat and head of *cinereiceps*. Apparently *cinereiceps* does not intergrade with *marginatus* since five Costa Rican specimens show no approach to our two specimens of *marginatus* from Panama.

Dabeiba, 1; Puerto Valdivia, 1 (int.); Rio Frio, 1; Cali, 1; Miraflores, 1.

(2759) **Rhynchocyclus sulphurescens assimilis** *Pelz.*

Rhynchocyclus assimilis PELZ., Orn. Bras., 1869, p. 110 (Borba, Brazil, *fide* Hellmayr *in litt.*).

Four specimens from Villavicencio and Buena Vista, in the Tropical Zone at the eastern base of the Eastern Andes, are brighter green above and somewhat yellower below than a specimen from Florencia and another from Mt. Duida, near the headwaters of the Orinoco, but in other respects, including the well-developed gray crown, which chiefly distinguishes them, these birds all agree.

Dr. Hellmayr writes me that in his forthcoming paper on the genus *Rhynchocyclus* he will show that the type-locality of *assimilis* is Borba on the Madeira. Possibly therefore five specimens from the headwaters of the Rio Roosevelt may be considered as fairly topotypical of that race. All have the gray crown but they are brighter than the Colombian birds and have the wing-quills and particularly coverts more widely margined with greenish yellow. No doubt the Colombian bird is separable but such separation to be satisfactory requires a more thorough study of the group than my material permits.

Villavicencio, 2; Buena Vista, 2; Florencia, 1.

(2760) **Rhynchocyclus sulphurescens exortivus** *Bangs.*

Rhynchocyclus sulphurescens exortivus BANGS, Proc. Biol. Soc. Wash., XXI, 1908, p. 163 (La Concepcion, Santa Marta).

Rhynchocyclus sulphurescens ALLEN, Bull. A. M. N. H., XIII, 1900, p. 146 (Minca; Bonda).

Specimens from the Magdalena and lower Cauca valleys are intermediate between *exortivus* and *asemus*. Thus one from Opon on the lower Magdalena is nearer the former while another from Chicoral in the more arid region above Honda is nearer the latter. Specimens from Malena and Puerto Valdivia have the crown grayish, but the throat yellowish and might be referred to either form. On purely faunal grounds I therefore place the Magdalena Valley bird under *exortivus*, the Puerto Valdivia one with *asemus*.

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[1] Since writing the above, Miller and Boyle send specimens of both *sulphurescens asemus* and *marginatus* from Puerto Valdivia.

Opon, 1; Malena, 1; Chicoral, 1.

(2764*a*) **Rhynchocyclus marginatus marginatus** *Lawr.*

Rhynchocyclus marginatus Lawr., Proc. Acad. N. S. Phila., 1868, p. 429 (Panama, Lion Hill).

Rhynchocyclus cinereiceps flavotectus Hellm., P. Z. S., 1911, p. 1126 (Nóvita; Noanamá).

Allowing for a very slight difference possibly due to the fading in the older specimen, specimens from western Colombia agree with the type of *R. marginatus* Lawr., from the line of the Panama R. R. While its gray head and grayish breast indicate that *marginatus* is apparently a representative of *cinereiceps*, it seems not to intergrade with that species (Ridgw., Bull. 50, IV, p. 392). As in some other instances, forms of Guianan and Ecuadorian origin evidently meet at Panama in *Rhynchocyclus sulphurescens flavo-olivaceus* on the one hand and *R. m. marginatus* on the other.

A specimen from Barbacoas and another from Buenavista, Nariño, closely resemble the type and cotype of *R. marginatus* from Panama, from which they differ only in being slightly darker above and in having the edging to the wing-coverts more ochraceous in tone. The first-named difference is doubtless due to the fading of the types, while the second is seasonal since it is shown by a specimen from Puerto Valdivia which, in the color of the wing-coverts as well as in other respects, agrees with the birds from Barbacoas and Buenavista.

A specimen from Esmeraldas and three from Guayaquil agree and differ from *marginatus* in having the crown grayer with no admixture of green, the throat and breast yellower, with grayish only on the chin, the wing-coverts less widely margined. They evidently are racially different from the Barbacoas, Buenavista and other Colombian specimens and possibly may represent *flavotectus* Hart. (Nov. Zool., IX, p. 608, San Javier, n. w. Ecuador).

Puerto Valdivia, 1; Nóvita, 1; Barbacoas, 1; Buenavista, Nariño, 1.

(2768) **Rhynchocyclus viridiceps** *Scl. & Salv.*

Rhynchocyclus viridiceps Scl. & Salv., P. Z. S., 1873, p. 280 (Pebas, Peru).

A single specimen from Florencia extends the known range of this species northward from Peru. I have, however, no Peruvian specimens for comparison. In size and in the color of the bill this species agrees with *R. klagesi*, which Miller also found at Florencia, but the uniformly greenish underparts, including the throat and chin, and green crown, of the same color as the back, distinguish *viridiceps*.

Florencia, 1.

(2770) **Rhynchocyclus flaviventris aurulentus** *Todd.*

Rhynchocyclus flaviventris aurulentus Todd, Proc. Biol. Soc. Wash., XXVI, 1913, p. 171 (Mamotoco, Santa Marta, Col.).

Rhynchocyclus flaviventris Allen, Bull. A. M. N. H., XIII, 1900, p. 146 (Bonda; Cacagualito).

Found by us only in the lower Magdalena at Varrud. Wied's types are too faded to be of value for subspecific determination, but a series from Santa Marta is brighter than two specimens from Bahia. Our bird is of course referable to the Santa Marta form.

Varrud, 1.

(2770*a*) **Rhynchocyclus klagesi** *Ridgw.*

Rhynchocyclus klagesi Ridgw., Proc. Biol. Soc. Wash., XIX, 1906, 115 (Maripa, Venezuela).

After comparison with the type, I refer two specimens from La Morelia and three from Florencia, in the upper Caquetá region, together with one from Mt. Duida, near the head of the Orinoco to this species. It is characterized by small size, (wing, ♂, 55 mm.), a gray crown, and chiefly by a dark, horn-color mandible which, basally, is paler, and is therefore quite unlike the uniformly colored, brownish mandible of *sulphurescens*. The specific distinctness of *klagesi* and *sulphurescens* is attested by the fact that at Florencia and Mt. Duida we have found both *klagesi* and *sulphurescens assimilis*.

La Morelia, 2; Florencia, 3.

(2773) **Todirostrum cinereum cinereum** (*Linn.*).

Todus cinereus Linn., Syst. Nat., I, 1766, p. 178 (Surinam).

Todirostrum cinereum Cass., Proc. Acad. N. S. Phila., 1860, p. 144 (Carthagena); Wyatt, Ibis, 1871, p. 332 (Cocuta Valley; San Nicholas); Scl. & Salv., P. Z. S., 1879, p. 512 (Medellin; Sta. Elena; Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 150 (Cienaga).

Todirostrum cinereum cinereum Hellm., P. Z. S., 1911, p. 1128 (Guineo).

Ranges throughout the larger part of the Tropical Zone of Colombia. Specimens from the Atrato and San Juan regions average smaller in size, and thus approach the Central American form *T. c. finitimum* to which, indeed, some of them might readily be referred. As a rule, however, *finitimum* has the back greener, the head blacker than *cinereum*, and, in color, the western Colombia birds are more nearly like the latter.

Turbaco, 1; Dabeiba, 5; Alto Bonito, 3; Peque, 1; Bagado, 1; Juntas de Tamaná, 1; San José, 1; Caldas, 1; Las Lomitas, 1; Puerto Valdivia, 2; Cali, 5; Rio Frio, 1; below Miraflores, (6300 ft.), 1; below Andalucia (3000 ft.), 4; Fusugasugá, 2; Chicoral, 2; Honda, 4; Malena, 1; Calamar, 3; Villavicencio, 1.

(2775) **Todirostrum sclateri** *Cab. & Hein.*

Todirostrum sclateri Cab. & Hein, Mus. Hein., II, 1859, p. 50 (Peru).

Six specimens from extreme southwestern Colombia agree with a series of eight birds from Rio de Oro and Chone, Manavi, Ecuador, and thus introduce this Ecuadorian form into Colombia.

While obviously a representative of *Todirostrum cinereum*, its grayer upperparts, paler underparts, and whitish throat are not approached by specimens from the Chocó region, a fact which suggests the complete detachment of the more southern form. In size, *sclateri* agrees with the small Central American race, *T. c. finitimum*, five males, having an average wing-measurement of 42 mm., but the comparatively small amount of gray on the upperparts of this form, make it less like *sclateri* in color than is true *cinereum*.

Tumaco, 2; Barbacoas, 3; Buenavista, Nariño, 1.

(2779) **Todirostrum nigriceps** *Scl.*

Todirostrum nigriceps Scl., P. Z. S., 1855, p. 66, pl. 84, fig. 1 (Santa Marta, Col.); Cass., Proc. Acad. N. S. Phila., 1860, p. 144 (Turbo); Allen, Bull. A. M. N. H., XIII, 1900, p. 150 (Bonda).

A male from Malena near Puerto Berrio agrees with Santa Marta specimens.

(2787) **Todirostrum schistaceiceps superciliare** *Lawr.*

Todirostrum superciliaris Lawr., Ann. Lyc. Nat. Hist., 1874, (Carthagena, Colombia, not "Venezuela" as stated in original description).

Of general distribution throughout the greater part of tropical Colombia. In addition to Lawrence's type we have five specimens from Bonda near Santa Marta, four of which essentially agree with it, while the fifth, in the grayness of its breast and obsoletely streaked throat, approaches *T. s. griseolum* Todd (Proc. Biol. Soc. Wash., 1913, 170, El Hacha, n. Venezuela). The last-named form, as it is represented by four specimens including the type, loaned me by Mr. Todd, is very near *superciliare,* but has a smaller bill and averages darker above and grayer on the breast and throat.

From true *schistaceiceps,* of Central America, *superciliare* differs in having less yellow on the flanks and particularly abdomen, the latter being in some specimens with scarcely a tinge of yellow.

The differences between topotypical specimens of the three races of this species are so slight that the satisfactory identification of specimens from other localities is attended with some difficulty, nevertheless all our remaining nine Colombian specimens were taken as far apart as Los Cisneros on the western slope of the Western Andes to Villavicencio at the eastern base of the Eastern Andes appear to be referable to *I. s. superciliare.* A female from the last-named locality is somewhat darker above than typical birds but has the throat and belly as white, the breast as pale as any bird in the series.

Los Cisneros, 1; La Manuelita, 1; Rio Frio, 1; Puerto Berrio, 2; Honda, 2; Chicoral, 1; Villavicencio, 1.

(2793) **Todirostrum latirostre** (*Pelz.*).

Euscarthmus latirostris Pelz., Orn. Bras., 1869, p. 173 (Borba, Brazil).

Two males from Florencia appear to represent this species of which, however, I have seen no authentic specimens.

Florencia, 2.

(2794) **Pœcilotriccus ruficeps ruficeps** (*Kaup*).

Todirostrum ruficeps Kaup, P. Z. S., 1851, p. 52 ("Mexico" = Colombia); Scl. & Salv., P. Z. S., 1879, p. 512 (Frontino).

Our specimens are all from the Subtropical Zone of the Central Andes. Specimens from the more southern part of this range in Colombia and from the Western Andes are referable to *P. ruficeps rufigene.*

Salento, 3; Sta. Elena, 1; Rio Toché, 1; El Eden, 6.

(2795) **Pœcilotriccus ruficeps rufigene** (*Scl. & Salv.*).

Todirostrum rufigene Scl. & Salv., P. Z. S., 1877, p. 522 (Mongi, Ecuador).

Specimens from the Subtropical Zone in the southern part of the Western and Central Andes are referable to this form, though when compared with our Ecuador specimens they show a distinct approach toward *ruficeps* in the darker crown-cap, grayer nape and in two specimens (one from each locality represented) blackish margin at the posterior border of the crown, while one has some black at the side of the throat.

Cerro Munchique, 3; La Palma, 2.

(2800) **Euscarthmus striaticollis zosterops** *Pelz.*

Euscarthmus zosterops Pelz., Orn. Bras., 1869, p. 173 (Maribitañas, Brazil).

In default of authentic specimens I refer two males from Florencia to this form which has been accredited by Salvadori and Festa (Boll. Mus. Tor., XIV, 1899, p. 5) to southeastern Ecuador. It is described by Hellmayr (Nov. Zool., XVII, 1910, p. 290) as "duller green" above than *striaticollis*, whereas my birds are brighter, having the upperparts oil-green rather than yellowish oil-green. In other respects, however, they agree with Hellmayr's description.

Florencia, 2.

(2812) **Euscarthmus granadensis** (*Hartl.*).

Todirostrum granadense Hartl., Rev. Zool., 1843, p. 289 (New Grenada).

Euscarthmus granadensis Scl. & Salv., P. Z. S., 1879, p. 512 (Retiro; Envigado; Sta. Elena); Allen, Bull. A. M. N. H., XIII, 1900, p. 150 (El Libano).

Occurs chiefly in the Temperate, but also in the Subtropical Zone. We found it only in the Western and Central Andes, but its presence in Bogotá collections indicates that it also inhabits the Eastern Andes.

Salencio, 1; Andes w. of Popayan, 2; Cocal (6000 ft.), 3; Almaguer, 3; Laguneta, 3; Sta. Elena, 2.

(2814*a*) **Euscarthmus septentrionalis** *Chapm.*

Euscarthmus septentrionalis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 176 (Honda, Col.).

Char. sp.— Similar to *Euscarthmus impiger* Scl. & Salv. but upperparts much grayer, the bill slightly smaller, more subulate, and blackish brown.

Found by us only in the Magdalena Valley at Honda, but occurring also at Anzoategui (alt. 4750 ft.) on the Caribbean slope of the Venezuelan mountains about 100 miles southwest of Puerto Cabello.

Honda, 2.

(2818) **Pseudotriccus pelzelni pelzelni** *Tacz. & Berl.*

Pseudotriccus pelzelni TACZ. & BERL., P. Z. S., 1885, p. 88 (Machay, e. Ecuador).

After comparison with a topotype of *P. p. berlepschi* Nels. loaned me by Mr. Nelson, I have no doubt that a specimen taken at Buena Vista is essentially typical of this species, the type of which came from the same slope of the Andes at approximately the same altitude. The bird was flushed from the ground in the dense growth which had sprung up in the bed of a brook and flew to a perch but a few inches from the ground on the side of the barranca. This circumstance suggests that the species is more or less terrestrial, a theory of some interest in connection with its long tarsi.

The affinities of this genus seem to me to be with *Cœnotriccus* rather than with *Myiobius* or its related genera or subgenera (*Myiophobus, Pyrrhomyias,* etc.). In its more rounded wing, more graduated tail, character of the tail-feathers, and long tarsi it is not unlike *Cœnotriccus.* In color-pattern there is a strong resemblance between the young of *Cœnotriccus ruficeps* and *Pseudotriccus* and while the bill in *P. pelzelni* is broader than in *C. ruficeps* the difference is slight and of degree rather than character.

Buena Vista, 1.

(2819) **Pseudotriccus annectens** (*Salvad. & Fest.*).

Pseudomyiobius annectens SALVAD. & FEST., Boll. Mus. Tor., XV, 1899, p. 12 (Gualea, w. Ecuador).

Four adults from the Subtropical Zone of the Western Andes agree in generic and specific characters with the description of the type of this species which it is important to note, was taken in the same life-zone in a neighboring part of Ecuador.

The color differences between *Pseudotriccus pelzelni pelzelni* and *P. annectens* are so largely bridged by the much browner *P. p. berlepschi* Nels. of eastern Panama, it seems not improbable that the latter is a representative and possibly conspecific form of *annectens.* It goes without saying, therefore, that I am unable to discover any generic differences between *Pseudotriccus* and *Pseudomyiobius.* Compared with a topotype of *berlepschi, annectens* differs only in its larger size and color, the crown being darker, back more olivaceous, less fulvous.

Cerro Munchique, 2; Cocal, 2.

(2820) **Cænotriccus ruficeps ruficeps** (*Lafr.*).

Muscicapa (*Todirostrum*) *ruficeps* LAFR., Rev. Zool. 1843, p. 291 (Colombia).

Occurs from the upper part of the Subtropical to the Temperate Zone in all three ranges. Specimens from the Central and Western Andes have the head slightly paler than those from near Bogotá. Old 'Bogotá' skins are not unlike fresh ones. Two immature specimens taken at Cocal, June 16 and 17, 1911, respectively, differ from adults in lacking the rufous head, the crown being but slightly browner than the back, the chin like the throat. One of these birds has several rufous feathers in the crown showing its unmistakable relations to *ruficeps,* which we have also taken at Cocal. The other, differs only in lacking these rufous feathers and bears, therefore, so strong a resemblance to *Cænotriccus simplex* Berl. (of which I have one specimen, the type of my *Ochthœca keaysi,* identified as *C. simplex* "or subsp." by von Berlepsch[1]) as to suggest that *simplex* is based on an immature example of *C. r. hapalopteryx,* the southern form of *ruficeps.* Our specimen of *simplex* differs from the young of *ruficeps* much as *hapalopteryx* is said to differ from it. That is, the back is browner, the margins of the wings and tail less brightly rufous. In size, the specimen of *simplex* is slightly larger and the mandible is darker than in the young of *ruficeps.* The bill is larger than in most specimens of *ruficeps* but can be matched by examples in our series. In short, if *Cænotriccus simplex* is not synonymous with *Cænotriccus ruficeps hapalopteryx,* the young of the latter is practically identical with it!

Cocal (alt. 6000 ft.) 3; Andes w. of Popayan, 5; Almaguer, 1; above Salento (9000 ft.), 1; Salento, 2; Santa Isabel, 1.

(2824) **Lophotriccus spicifer** (*Lafr.*).

Todirostrum spiciferum LAFR., Rev. Zool., 1846, p. 363 ("Brasilia").

La Morelia, 1.

(2825) **Lophotriccus squamæcristatus squamæcristatus** (*Lafr.*).

F [*lege T.* = *Todirostrum*] *squamæcrista* LAFR., Rev. Zool., 1846, p. 363 (Bogotá).

Inhabits the Subtropical Zone of all three ranges. I can detect no difference between birds from Las Lomitas in the Western Andes and Buena Vista in the Eastern Andes. The species has not been reported from the coast region of Colombia but near the Ecuador border at Barbacoas and Ricaurte it is represented by the small Costa Rican form *L. s. minor* Cherrie.

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[1] *Cf.* Berl. & Stolz., P. Z. S., 1896, 361.

La Frijolera, 1; Salencio, 2; Las Lomitas, 5; San Antonio, 1; Miraflores, 2; La Candela, 1; near San Agustin, 1; Fusugasugá, 1; Buena Vista, 4.

(2825*a*) **Lophotriccus squamæcristatus minor** *Cherrie.*

Lophotriccus squamæcristatus minor Cherrie, Proc. U. S. N. M., XIV, 1891, p. 337 (Grecia, Costa Rica).

In southwestern Colombia, at sea-level and upward to 2500 ft., and southward in the humid coast region of Ecuador, *L. s. squamæcristatus* of the Subtropical Zone, is represented by a small form which agrees in size with the Costa Rican race. The crest, however, appears to be less developed than in the Bogotá form. The differences in color between *squamæcristatus* and *minor* are so slight that without reasonably comparable specimens, color characters are not to be depended on. Our Ecuador birds are not taken at the same season as those from Chiriqui and hence satisfactory comparison of their colors cannot be made. However, as the appended table shows, Ecuador birds resemble Costa Rican ones in size, though in color they do not differ appreciably. It should be noted that no representative of this species has been recorded from the coast region of Colombia north of Barbacoas.

Ricaurte, 1; Barbacoas, 2.

Measurements of Males of *Lophotriccus squamæcristatus.*

		Wing	Tail
Lophotriccus s. squamæcristatus,	Buena Vista, E. Andes,	51	43
“ “ “	“ “ “ “	50	41
“ “ “	Fusugasugá, E. Andes,	52	44.5
“ “ “	La Candela, Cen. Andes,	52	44.5
“ “ “	Miraflores, “ “	52	42
“ “ “	San Antonio, W. Andes,	50.5	41
“ “ “	Las Lomitas, “ “	51	40
“ “ “	“ “ “ “	50	40
“ “ “	“ “ “ “	51	40
“ “ “	“ “ “ “	50	40
Lophotriccus s. minor	Ricaurte (alt. 2500 ft.)	48.5	36
“ “ “	Esmeraldas, Ecuador,	48.5	37
“ “ “	“ “	48	37
“ “ “	“ “	48.5	36
“ “ “	“ “	48.5	37
“ “ “	Chone, Manavi, “	48	38
“ “ “	Chiriqui, Panama	50	38
“ “ “	“ “	47	35

(2829*a*) **Orchilus atricapillus** *Lawr.*

Orchilus atricapillus Lawr., Ibis, 1875, p. 385 (Costa Rica).

Our four specimens are from the Tropical Zone of the Pacific. This species has been recorded from Ecuador by Hartert (Nov. Zool., IX, 1902, p. 607) but has not before been reported from Colombia. In default of material representing all the forms concerned in the case of *Orchilus vs. Perisotriccus* I here follow Hellmayr (Nov. Zool., XIII, 1906, p. 22).

Alto Bonito, 1; Nóvita, 1; San José, 1; Barbacoas, 1.

(2831) **Atalotriccus pilaris pilaris** (*Cab.*).

Colopterus pilaris Cab., Arch. für Naturg., XIII, 1847, p. 253, pl. 5, fig. 4 (Carthagena); Allen, Bull. A. M. N. H., XIII, 1900, p. 150 (Bonda; Minca; Cacagualito).

Todirostrum exile Cass., Proc. Acad. N. S. Phila., 1860, p. 144 (Carthagena).

Found by us only in the Magdalena Valley. Three specimens from Honda and Chicoral are darker than a good series of birds taken at the same season near Santa Marta, which doubtless typically represent *pilaris*. They thus approach *A. p. venezuelensis* Ridgw. (Type No. 73454 A. M. N. H.), but are smaller.

La Playa, 1; Honda, 2; Chicoral, 1.

(2843) **Hapalocercus meloryphus** (*Wied*).

Euscarthmus meloryphus Wied, Beitr. Naturg. Bras., III, 1831, p. 947 (Campo Geral, Prov. Minas and Bahia).

Hapalocercus meloryphus Wyatt, Ibis, 1871, p. 332 (Savanna of Bucaramanga).

Hapalocercus paulus Allen, Bull. A. M. N. H., XIII, 1900, p. 150 (Chirua; San Miguel; La Concepcion).

A female from Chicoral in the upper Magdalena Valley appears to me to be inseparable from *H. meloryphus*, which, however, is too poorly represented in our collection to permit of satisfactory identification of the Chicoral specimen. The type of *meloryphus* is too faded to be of value in this connection, so far as color is concerned, and in addition to it I have but one specimen from Matto Grosso and one from the Parana (U. S. N. M., 20993). The differences between our specimen, which is in worn plumage, and those from Matto Grosso and the Paraná, which are in fresh plumage, are apparently seasonal. This view finds support in a series of eight specimens, including the type of *Hapalocercus paulus*, loaned me by Mr. Bangs, most of which closely match the more southern birds in color, and if the latter typically represent *meloryphus* it would seem that *paulus* can be distinguished from it only by its slightly shorter wings and tail.

A specimen from Carupano, Venezuela, agrees with the Chicoral bird. Comparative measurements of females are appended.

	Wing	Tail	Tarsus	Culmen
S. E. Brazil (Type of *hapalocercus*)	46	41	broken	broken
Chapada Brazil (no sex)	43.5	42	19	11
Chirua, Santa Marta, Col. (Type of *paulus*)	45.5	37	19	11
" " " "	41	39	19	10
La Concepcion "	41	35.5	17	10
" "	44	37	19	imperfect
Chicoral, "	44	39	19	11

(2847) **Hapalocercus acutipennis** *Scl. & Salv.*

Hapalocercus acutipennis Scl. & Salv., P. Z. S., 1873, p. 187 (Bogotá); *Ibid.*, 1879, p. 572 (Medellin).

Salento, 1.

(2852*a*) **Habrura pectoralis bogotensis** *Chapm.*

Habrura pectoralis bogotensis Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 646 (Subia, Bogotá Savanna, Col.).

Similar to *H. p. pectoralis* but more richly colored throughout, the buffy areas of *pectoralis* largely ochraceous-tawny; the lores, margins to frontal feathers, auricular region, rump, wing-bars and quill margins ochraceous-tawny, the foreback blackish brussels-brown; crown black, margined with ochraceous-tawny; underparts largely ochraceous-tawny, the throat and center of the abdomen yellowish buffy; a band of ochraceous-tawny crossing the breast; size between that of *pectoralis* and *brevipennis*. Wing, 44.5; tail, 40; tarsus, 17; culmen, 10 mm.

This is the fourth new bird taken in the marshes where I had the good fortune to shoot the types of *Ixobrychus exilis bogotensis* and *Agelaius icterocephalus bogotensis*, and from which Brother Apolinar secured the type of *Cistothorus apolinari.*

Evidently the native collectors who, during the past eighty years, have been shipping birds' skins from Bogotá, have collected chiefly on the forested slopes of the Andes, neglecting the country at the city's gates.

Geographically, the nearest species of the genus *Habrura* to the one here described, is *Habrura pectoralis brevipennis* Berl. & Hart. (Nov. Zool., IX, 1902, p. 40). This is a small form of *pectoralis*, which it is said to resemble in color, of the lower Orinoco and British Guiana and hence of the Tropical Zone. It follows, therefore, that as with *Agelaius icterocephalus bogotensis*, we have in the bird here described a form of a Tropical Zone species apparently isolated on the Temperate Zone Savanna of Bogotá.

This fact, in connection with the bird's degree of differentiation, suggests its specific distinctness, but although I believe that actual intergradation does not occur I feel that the bird's relationships are best expressed by a trinomial. We are indebted for the type and only specimen of this new form to Brother Apolinar Maria, Director of the Instituto de la Salle, of Bogotá, whom we have to thank for invaluable coöperation in our study of the birds of that region.

(2858) **Pogonotriccus pœcilotis** (*Scl.*).

Leptopogon pœcilotis Scl., P. Z. S., 1862, p. 111 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 512 (Concordia).

Inhabits the Subtropical Zone of all three ranges. An old 'Bogotá' skin is essentially like a fresh one from near Fusugasugá with which the remaining birds in the series agree.

San Antonio, 2; Cerro Munchique, 2; Miraflores, 1; Salento, 3; Rio Toché, 1; La Candela, 2; Aguadita, 1.

(2860) **Pogonotriccus opthalmicus** *Tacz.*

Pogonotriccus opthalmicus Tacz., P. Z. S., 1874, p. 135 (Amable-Maria, cen. Peru).

Pogonotriccus alleni Oberh., Proc. U. S. N. M., XXV, 1903, p. 65 (Rio Cauca).

Occurs in the Subtropical Zone of the Western and Central Andes including the eastern slope of the last-named range. I have seen no Peruvian specimens and follow Hellmayr, who has examined Oberholser's type (A. M. N. H. No. 71758), in referring the bird of the Cauca region to *opthalmicus*.

Salencio, 1; Las Lomitas, 3; San Antonio, 1; Cerro Munchique, 1; Gallera, 3; Salento, 2; Rio Toché, 1.

(2863) **Oreotriccus**[1] **plumbeiceps** (*Lawr.*).

Pogonotriccus plumbeiceps Lawr., Ann. Lyc. Nat. Hist., N. Y., IX, 1870, p. 267 (Bogotá).

Inhabits the Tropical Zone of all three ranges. Seven specimens agree with a 'Bogotá' cotype in the Lawrence collection (A. M. N. H., No. 42480).

Las Lomitas, 1; San Antonio, 1; Gallera, 1; Miraflores, 1; Salento, 1; La Candela, 2.

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[1] Replacing *Oreomyias*, preoccupied. Cf. Richmond, Proc. Biol. Soc. Wash., XXVIII, 1915, p. 180.

(2872) **Serpophaga cinerea cana** *Bangs.*

Serpophaga cinerea cana Bangs, Proc. Biol. Soc. Wash., XVII, 1904, p. 113 (Santa Marta); Hellm., P. Z. S., 1911, p. 1130 (Pueblo Rico, 5200 ft.).

Serpophaga cinerea Wyatt, Ibis, 1871, p. 332 (Canuto); Scl. & Salv., P. Z. S., 1879, p. 512 (Envigado; Frontino).

Serpophaga cinerea grisea Allen, Bull. A. M. N. H., XIII, 1900, p. 149 (Chirua; San Miguel; La Concepcion).

Occurs in both Tropical and Subtropical Zones throughout Colombia, frequenting small streams and rivers. In default of typical specimens of *cinerea* I follow Hellmayr in referring Colombian birds to *cana.*

San José, 2; Caldas, 2; Ricaurte, 1; Miraflores, 1; Salento, 5; Rio Toché, 3; Andalucia (3000 ft.), 6; near San Agustin, 2; Aguadita, 2; Quetame, 2.

(2877*a*) **Inezia caudata intermedia** *Cory.*

Inezia caudata intermedia Cory, Field Mus. Pub., 167, 1913, p. 289 (Rio Aurate, 15 m. east of Maracaibo, Venezuela).

A specimen from Algododonal on the Lower Magdalena, differs from a Surinam example in being more olive above, having the breast less buffy and chin whiter, and is evidently to be referred to this subspecies.

A satisfactory solution of the problem of the generic relationships of this species is doubtless best reached by accepting the genus that Cherrie[1] has proposed for it.

Algodonal, 1.

(2880) **Anæretes parulus æquatorialis** *Berl. & Tacz.*

Anœretes parulus œquatorialis Berl. & Tacz., P. Z. S., 1884, p. 296 (Cechce, w. Ecuador).

Specimens from the southern part of the Central Andes agree with others from Mt. Pichincha and extend the known range of this species into Colombia.

La Sierra, 1; Valle de las Pappas, 2.

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[1] *Cf.* Bull. Mus. B'klyn. Inst., I, 1909, 390.

(2885) **Anæretes agilis** (*Scl.*).

Euscarthmus agilis Scl., P. Z. S., 1856, p. 28, pl. 118 (Bogotá).

Apparently restricted to the upperpart of the Temperate Zone. In addition to our specimens from the Central and Eastern Andes we have also a series from the vicinity of Quito.

Valle de las Pappas, 1; Paramo of Choachi, 1.

(2888*a*) **Mionectes striaticollis poliocephalus** *Tsch.*

M.[*ionectes*] *poliocephalus* Tsch., Fauna Peruana, 1845–6, p. 148, pl. ix, fig. 1 (Peru, "tiefern Waldregion").

Mionectes striaticollis Scl. & Salv., P. Z. S., 1879, p. 512 (Sta. Elena).

Inhabits the Subtropical Zone of all three ranges. The Colombian bird is not for a moment to be confused with true *striaticollis* (of which I have one specimen from Yungas, Bolivia), from which it differs conspicuously in its more narrowly streaked throat, and the restriction of the breast-stripes, but in default of topotypical examples of *poliocephalus* I am unable to say whether our specimens are properly referred to the Peruvian form. Birds from the Bogotá region have the head appreciably greener than those from the Western Andes, and it is probable that they, at least, are separable from *poliocephala*.

San Antonio, 1; Cerro Munchique, 1; La Manuelita, 1; Salento, 2; Sta. Elena, 1; La Candela, 4; near San Agustin, 1; Fusugasugá, 2.

(2890) **Mionectes olivaceus hederaceus** *Bangs.*

Mionectes olivaceus hederaceus Bangs, Proc. Biol. Soc. Wash., XXIII, 1910, p. 73 (Pavas, 4400 ft., w. Col.); Hellm, P. Z. S., 1911, p. 1131 (San Joaquim; Calima; Nóvita).

This form of *Mionectes olivaceus* inhabits the Tropical Zone of the Pacific coast, and extends eastward at least to the lower Cauca Valley. At the eastern base of the Eastern Andes it is represented by a form (*M. o. pallidus*) which, while far removed geographically, is nearer *hederaceus* in appearance than any other race of the *olivaceus* group.

Nóvita Trail (1800 ft., w. slope), 1; Juntas de Tamaná, 1; San José, 2; Los Cisneros, 1; Las Lomitas, 1; Cocal, 1; Barbacoas, 5; Puerto Valdivia, 1.

(2890*a*) **Mionectes olivaceus pallidus** *Chapm.*

Mionectes olivaceus pallidus Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 177 (Buena Vista, Col.).

Char. subsp.— In general coloration most nearly resembling *M. o. hederaceus* Bangs, but with less yellow in the plumage, the back, therefore, bluer green, the breast-streaks whiter, the belly paler.

Known only from two specimens collected at Buena Vista.

(2892) **Pipromorpha oleaginea oleaginea** (*Licht.*).

Muscicapa oleaginea LICHT., Verz. Doubl., 1823, p. 55 (Bahia).

Specimens from Florencia and Villavicencio agree and represent the dark-bellied, Brazilian form which is markedly different from the more northern *parca.* I have, however, no topotypical Bahian birds for comparison. Suapure, Venezuela, birds agree with those from eastern Colombia, but Trinidad examples appear to be intermediate.

Villavicencio, 2; Florencia, 2.

(2892*a*) **Pipromorpha oleaginea parca** (*Bangs*).

Mionectes oleagineus parcus BANGS, Proc. N. E. Zool. Club, 1900, p. 20 (Panama).

Mionectes oleagineus SCL. & SALV., P. Z. S., 1879, p. 512 (Remedios); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 149 (Bonda; Minca; Cacagualito; Santa Marta).

Specimens from the Lower Cauca and Magdalena Valleys agree with those from Panama and Santa Marta, and are much paler, especially below, than those from the eastern base of the Andes which are referable to true *oleaginea.*

Puerto Valdivia, 2; Honda, 1; Chicoral, 2; Andalucia, 1.

(2896) **Leptopogon superciliaris poliocephalus** *Cab. & Hein.*

Leptopogon poliocephalus CAB. & HEIN., Mus. Hein., II, 1859, p. 55 (Bogotá).

Leptopogon superciliaris poliocephalus HELLM., P. Z. S., 1911, p. 1132 (Nóvita; San Pablo, 4500 ft.).

Occurs in all three ranges and in both Tropical and Subtropical Zones, but our material does not satisfactorily determine its zonal distribution. In default of topotypical (Peruvian) specimens, I follow von Berlepsch (Int. Orn. Cong., 1907, p. 492) in recognizing the Colombian bird as subspecifically distinct. From a Yungas, Bolivia, example, our Colombian birds differ in being much brighter yellow throughout, the belly being canary instead of yellowish gray. Two birds from Guacharo, northeast Venezuela, agree with Colombian specimens, but two Guatemalan specimens are much smaller.

Alto Bonito, 1; Dabeiba, 2; Peque, 1; Cocal, 1; Miraflores, 2; Buena Vista, 2; Villavicencio, 2.

(2899) **Leptopogon amaurocephalus** *Cab.*

Leptopogon amaurocephalus Cab., Arch. für Naturg., 1847, p. 251 (Brazil); Allen, Bull. A. M. N. H., XIII, 1900, p. 149 (Bonda).

Leptopogon amaurocephalus diversus Todd, Proc. Biol. Soc. Wash., 1913, p. 171 (Santa Marta, Col.).

A specimen from Chicoral and another from Villavicencio agree with two examples from Santa Marta, while the latter can be closely matched with specimens from Chapada, Matto Grosso, Brazil. Having but one specimen from Rio Janeiro and none from either Paraguay or Peru, satisfactory determination of these Colombian birds is not at present possible.

Chicoral, 1; Villavicencio, 1.

(2901) **Leptopogon erythrops** *Scl.*

Leptopogon erythrops Scl., P. Z. S., 1862, p. 111 (Bogotá); Scl. & Salv., *Ibid.*, 1879, p. 512 (Sta. Elena; Medellin).

Found by us only in the Subtropical Zone of the Central and Eastern Andes. Birds from these two ranges agree in color. I have no old 'Bogotá' skins for comparison with our recent ones from the Bogotá region.

Salento, 3; Sta. Elena, 2; La Palma, 6; La Candela, 3; Aguadita, (above Fusugasugá), 4.

(2905) **Capsiempis flaveola leucophrys** *Berl.*

Capsiempis leucophrys Berl., Proc. 4th Int. Orn. Cong., 1907, p. 360 (Bogotá).

Two specimens from Chicoral are evidently typical of this form. They differ from two Bahia examples of *flaveola* in having broader wing-bars, a larger bill, a grayish frontal band and loral stripe and a whitish chin.

Four specimens from Cumanacoa, Bermudez, Venezuela, have the bill as large as in *leucophrys* but in color are perhaps near *flaveola*. They are, therefore, fairly intermediate between the Bahia and Bogotá forms.

Chicoral, 2.

(2910) **Phyllomyias griseiceps griseiceps** (*Scl.*).

Tyranniscus griseiceps Scl., P. Z. S., 1870, p. 841 (Babahoyo, Ecuador); Allen, Bull. A. M. N. H., XIII, 1900, p. 148 (Minca; Santa Marta).

A specimen from Cunday, in the Bogotá region, agrees in size and with the description of this form of which I have seen no authentic specimens. Two specimens from Minca, Santa Marta, resemble the Cunday example.

If, as I assume, the Cauca Valley bird is separable, the west Ecuador form in this instance ranges northward in the Eastern Andes.

Bogotá region, 1.

(2910*a*) **Phyllomyias griseiceps caucæ** *Chapm.*

Phyllomyias griseiceps caucæ Chapm., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 645 (e. of Palmira, Cen. Andes, Col.).

Char. subsp.— Similar to *P. g. griseiceps* (Scl.) but upperparts much darker, the back olive washed with blackish and not clearly defined from the crown; size larger.

Known only from the Subtropical Zone above the Cauca Valley.

Miraflores, 2.

(2916) **Acrochordopus zeledoni** (*Lawr.*).

Pogonotriccus ? zeledoni Lawr., Ann. Lyc. Nat. Hist. N. Y., IX, 1868, p. 144 (Dota, Costa Rica).

Tyranniscus leucogonys Scl. & Salv., P. Z. S., 1870, p. 841 (Bogotá).

Acrochordopus leucogonys Berl. & Hart., J. f. O., 1905, p. 26.

Idiotriccus zeledoni Ridgw., Proc. Biol. Soc. Wash., XVIII, 1905 (Sept. 2), p. 210.

A single specimen from Buena Vista, above Villavicencio in the east Bogotá district agrees, in all respects with authentic specimens of "*Idiotriccus*" *zeledoni* from Costa Rica and Chiriqui, a fact which suggested the specific identity of this species and *Tyranniscus leucogonys* Scl. & Salv., based on a Bogotá skin. This suspicion was confirmed on the discovery that *leucogonys* was referred to their new genus *Acrochordopus* by Berlepsch and Hartert, because, among other characters, it possesses a pycnaspidean tarsus (fully developed in our specimen). *Acrochordopus* has some months' priority over *Idiotriccus* just as *zeledoni* has over *leucogonys*, and if, as stated by Berlepsch and Hartert, this species is congeneric with *Acrochordopus subviridis* (Pelz)., the type of the genus (a species I have not seen), it should apparently stand as above.

Buena Vista, 1.

(2918) **Phæomyias murina incomta** (*Cab. & Hein.*).

Elainea incomta Cab. & Hein., Mus. Hein., II, 1859, p. 59 (Cartagena, Col.).

Occurs throughout most of the Tropical Zone of Colombia.

Cisneros, 1; Cali, 5; Calamar, 2; Chicoral, 1; Honda, 3; Fusugasugá, 1; Villavicencio, 1.

(2922) **Camptostoma pusillum pusillum** (*Cab. & Hein.*).

M[yiopatis] pusilla Cab. & Hein., Mus. Hein. II, 1859, p. 58 (Cartagena).

Ornithion pusillum Allen, Bull. A. M. N. H., XIII, 1900, p. 148 (Bonda; Santa Marta).

A Tropical Zone species which in one form or another occurs throughout Tropical Colombia, except on the Pacific coast. Specimens from Banco and Algodonal in the lower Magdalena Valley are typical, but one from Chicoral, in the upper Magdalena Valley, is darker above than any of the eight Santa Marta examples which doubtless typically represent this form, and it thus closely approaches *C. o. napæum.* A much worn example from the Atrato River (exact locality, not stated) appears to be fairly typical of *pusillum* but has the crown somewhat darker.

R. Atrato, 1; Banco, 1; Carpintero, 1; Algodonal, 1; Chicoral, 1.

(2923) **Camptostoma pusillum napæum** (*Ridgw.*).

Ornithion napæum Ridg., Proc. U. S. N. M., 1887, p. 520 (Diamantina, near Santarem, Brazil).

A specimen from Villavicencio is darker than true *pusillum* and resembles specimens from the Orinoco region and Trinidad.

Villavicencio, 1.

(2923*a*) **Camptostoma caucæ** *Chapm.*

Camptostoma caucæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 178 (Rio Frio, Cauca Valley, Col.).

Char. sp.— Most nearly resembling *C. pusillum*, but darker above and paler below, the crown with a sooty cap clearly defined from the grayish olive back; the throat and breast gray, quite unlike the sulphur-yellow belly.

Known only from the Tropical Zone in the Cauca Valley.

Rio Frio, 2; Miraflores, 2.

(2926*a*) **Microtriccus brunneicapillus brunneicapillus** (*Lawr.*).

Tyrannulus brunneicapillus Lawr., Ibis, 1862, p. 12 (Panama R. R. Line).

This apparently uncommon bird inhabits the Tropical Zone of the Pacific coast and eastward through Antioquia to the Magdalena Valley. Pacific coast specimens are brighter than the type and cotype from Panama, while a specimen from Puerto Berrio on the Magdalena is slightly paler and may show an approach toward *M. b. dilatus* Todd (Proc. Biol. Soc. Wash., XXVI, 1913, p. 171) of Venezuela.

Alto Bonito, 1; Buenaventura, 1; Puerto Berrio, 1.

(2927*a*) **Tyrannulus elatus reguloides** *Ridgw.*

Tyrannulus reguloides Ridgw., Proc. U. S. N. M., X, 1887, p. 521 (Diamantina, near Santarem, Brazil).

Tyrannulus elatus Scl. & Salv., P. Z. S., 1879, p. 512 (Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 148 (Bonda).

Ranges throughout tropical Colombia inhabiting both extremely humid and arid or semi-arid parts of the Tropical Zone without apparent response in color characters to its widely varying environment. Our specimens agree with two from the lower Amazon, but I have no topotypical specimens of true *elatus* and follow Ridgway in referring Colombian specimens to *reguloides;* though for distributional reasons I feel that this author's expressed doubt as to the validity of this form is well-founded! A single example from La Morelia in the Caquetá region is slightly duller above and more olivaceous below, and has a smaller bill than other birds in the series.

Quibdó, 1; Buenaventura, 1; Barbacoas, 4; Puerto Valdivia, 1; Cali, 2; Rio Frio, 1; Calamar, 1; Honda, 1; La Morelia, 1.

(2929) **Mecocerculus uropygialis** *Lawr.*

Mecocerculus uropygialis Lawr., Ann. Lyc. Nat. Hist., N. Y., IX, 1870, p. 266 (Ecuador).

A specimen sent by Brother Apolinar from Choachi in the Temperate Zone east of Bogotá agrees with Lawrence's type when due allowance is made for fading in the last-named specimen.

(2928) **Tyranniscus nigricapillus nigricapillus** (*Lafr.*).

Tyrannulus nigro-capillus Lafr., Rev. Zool., 1845, p. 341 (Bogotá).

Tyranniscus nigricapillus Scl. & Salv., P. Z. S., 1879, p. 512 (Sta. Elena).

Our specimens are from the Western and Central Andes chiefly from the Temperate Zone. Old 'Bogotá' skins have the crown, wings, and tail browner.

Andes w. of Popayan, 1; Almaguer, 1; Salento, 1; Sta. Elena, 1.

(2930) **Tyranniscus cinereiceps** (*Scl.*).

Tyrannulus cinereiceps Scl., P. Z. S., 1860, p. 69 (Pallatanga, Ecuador).

I refer to this species, of which I have seen no authentic specimens, four specimens from the Central Andes. One from below Salento and one from Sta. Elena agree with each other and descriptions of the species, being as bright below and somewhat brighter above than *T. nigricapillus.* But one from above Salento, and one from El Eden, are much duller more grayish below and much darker, more olive-grayish above. The El Eden specimen is obviously immature, the other appears to be adult; and although it agrees with the two birds first mentioned in every detail of pattern and size, differs so conspicuously in its less yellow more grayish color, that it is difficult to believe they are conspecific. Nevertheless, I provisionally refer it and the El Eden specimen to *cinereiceps.*

Below Salento, 1; above Salento, 1?; Sta. Elena, 1; El Eden, 1?

(2937) **Tyranniscus chrysops chrysops** (*Scl.*).

Tyrannulus chrysops Scl., P. Z. S., 1858, p. 458 (Gualaquiza, Ecuador).

Tyranniscus flavifrons Cab. & Hein., Mus. Hein., II, 1859, p. 58 (New Grenada = Bogotá).

Tyranniscus chrysops Wyatt, Ibis, 1871, p. 333 (Herradura; Pirico; Naranjo); Scl. & Salv., P. Z. S., 1879, p. 513 (Retiro; Concordia; Sta. Elena).

Appears to be rare on the Pacific Coast but occurs throughout most of the remaining territory explored by us chiefly in the Subtropical Zone, but ranging upward to 9000 ft. at Sta. Elena. Our series of forty-six specimens confirms the existence of a small race (*T. c. minimus,* Bull. A. M. N. H., 1912, p. 153) of this species but indicates that it is not confined to the Santa Marta region but may occur in the Tropical Zone of the lower Cauca and Magdalena Valleys. We have not, however, a sufficient number of specimens to solve this problem in distribution which is rendered complicated by the large amount of sexual variation in size shown by this species. This makes accurate sexing of specimens of the first importance and in default of a satisfactorily sexed series from the Caribbean region as well as from Ecuador, I can make no attempt to define the ranges of the large and small forms of this species. Specimens from the west Bogotá region are somewhat larger than others from Ecuador and appear to have the frontlet brighter yellow, but four birds from what we may call the east Bogotá region (Villavicencio) agree with the Ecuadorian examples both in color and size. There seems, therefore, to be no reason for recognizing a Bogotá form.

Los Cisneros, 1; Puerto Valdivia, 1; Las Lomitas, 2; San Antonio, 7; Gallera, 1; Ricaurte, 3; Rio Frio, 1; La Sierra, 4; Miraflores, 2; Sta. Elena, 10; near San Agustin, 1; La Palma, 1; Fusugasugá, 3; Aguadita, 3; Honda, 2; Buena Vista, 3; Villavicencio, 1.

(2938) **Elænia flavogaster flavogaster** (*Thun.*).

Pipra flavogaster Thunberg, Mem. Acad. St. Petersb., VIII, 1822, p. 286 (Brazil).
Elainea pagana Scl. & Salv., P. Z. S., 1879, p. 513 (Medellin); Allen, Bull. A. M. N. H., XIII, 1900, p. 147 (Bonda; Minca; Onaca; Sta. Marta; Cacagualito).

Occurs throughout the greater part of tropical Colombia. Specimens from the Pacific slope show some approach toward *E. f. semipagana* and two from Barbacoas agree with west Ecuador birds in the color of the crest, but the throat is more as in eastern Colombian specimens.

Barbacoas, 2; Los Cisneros, 1; Caldas, 1; Las Lomitas, 2; San Antonio, 1; Cali, 3; Rio Frio, 1; Popayan, 1; Miraflores, 1; La Palma, 1; w. slope below Andalucia, 2; Chicoral, 1; Honda, 3; Remedios, 1; Calamar, 1; Boca de Chimi, 1; Quetame, 5.

(2942) **Elænia gigas** *Scl.*

Elainea gigas Scl., P. Z. S., 1870, p. 831 (Rio Napo, Ecuador).

This species is apparently restricted to the eastern side of the Eastern Andes.

La Morelia, 1; Villavicencio, 2.

(2947) **Elænia chiriquensis chiriquensis** *Lawr.*

Elainia chiriquensis Lawr., Ann. Lyc. Nat. Hist. N. Y., VIII, 1867, p. 176 (Chiriqui, Panama).
Elænia albivertex Berl., Proc. 4th Int. Orn. Cong., 1907, p. 400.
Elænea pagana sororia Allen, Bull. A. M. N. H., XIII, 1900, p. 147 (Santa Marta).

Of general distribution throughout the Subtropical Zone but apparently not common in the Cauca region. In the Santa Marta group it is recorded from the Tropical Zone.

San Antonio, 2; La Florida, 1; Miraflores, 1; near San Agustin, 11; La Candela, 1; Andalucia (7000 ft.), 1; Fusugasugá, 1; Monteredondo (near Quetame), 1.

(2951) **Elænia pudica brachyptera** *Berl.*

Elænia brachyptera Berl., Proc., IV, Int. Orn. Cong., 1907, p. 407 (San Pablo, w. Col.).

A series of birds from southwestern Colombia occupies the range assigned to this species, and in color differs from *Elænia griseigularis* as *brachyptera* is said to differ from it. Our males, however, have the wing ranging from 71 to 74 mm. instead of from 56.5 to 69.2 mm., the measurements given by von Berlepsch; but Hartert (Nov. Zool., V, 1898, p. 487) records four males from Ecuador as measuring, Wing, 79 mm. Since this is the only form of *Elænia* secured by us in the Subtropical Zone of southwestern Colombia, I assume in spite of this apparent discrepancy in size that our specimens should be referred to *brachyptera.*

Compared with a specimen from Marcapata, southern Peru, labelled by von Berlepsch "*Elænia pallatangæ,*" they are decidedly more olivaceous, less brownish above and have black wings and tail; but the outer margin of the outer pair of rectrices is usually yellowish or grayish as in *pallatangæ.*

We have a specimen recently collected by Richardson at Zamora in southeastern Ecuador which agrees with the specimens listed below, except that the outer web of the outer rectrices is of the same color as the inner web.

The distributional facts involved in connection with the close resemblance existing between the two forms, strongly suggests the conclusion that *brachyptera* is a southern form of *pudica.* Both occupy the same zone, *pudica* in its more northern, and *brachyptera* its more southern part; thus, like representative races, one replaces the other and at no point have we found them together. Aside from the fact that *brachyptera* has a concealed white crest which *pudica* is without, the differences between the two birds are of a purely racial nature, *brachyptera* being very slightly darker above and somewhat yellower below. However, three specimens of *pudica* from the northern Central Andes (Barro Blanco and Rio Toché) have a distinct indication of white in the crown and to this extent approach *brachyptera* with which I believe *pudica* intergrades.

Andes w. of Popayan, 1; Cerro Munchique, 6; Florida, 1; Ricaurte, 2; La Sierra, 2.

(2955) **Elænia parvirostris** *Pelz.*

Elainea parvirostris Pelz., Orn. Bras., 1869, pp. 107, 178 (Curytiba, Brazil).

Five specimens from Florencia agree with four from Bermudez, Venezuela, one of which (type of *Elænia albiventris* Chapm.) has been identified by von Berlepsch as *parvirostris.*

Florencia, 5.

(2957) Elænia pudica pudica *Scl.*

Elainia pudica Scl., P. Z. S., 1870, p. 833 ('Bogotá').

Elænia frantzi Scl. & Salv., P. Z. S., 1879, p. 513 (Medellin; Sta. Elena).

Elænia browni Bangs, Proc. Biol. Soc. Wash., 1898, p. 158 (Pueblo Viejo, Santa Marta Mts., alt. 8000 ft., Col.); Allen, Bull. A. M. N. H., XIII, 1900, p. 147 (El Lorenzo; El Libano; Valparaiso).

Elænia frantzi pudica Berl., Proc. 4th Int. Cong., 1907, p. 416.

Taken only in the Subtropical Zone of the Central and Eastern Andes. Comparison of seven specimens, including ten from near Bogotá which may be considered typical, with twelve from the Santa Marta Mts. confirms von Berlepsch's (*l. c.*) belief that birds from that region (*E. browni* Bangs) are not separable from *pudica* Scl.

The Bogotá birds average darker but the difference is slight and wholly bridged by individual variation. I agree with Ridgway that this bird is not specifically related to *E. frantzi* (*cf.* Bull. U. S. N. M. 50, IV, p. 897), but as stated below, suspect that it does intergrade with *E. brachyptera* Berl.

Barro Blanco, 4; Salento, 1; Laguneta, 1; Rio Toché, 2; Fusugasugá, 3; Sta. Elena, 10; Choachi, 4; Subia, 2; Pradera, 1.

(2965*a*) Myiopagis viridicata accola *Bangs.*

Myiopagis placens accola Bangs, Proc. N. E. Zool. Club, III, 1902, p. 35 (Boquete, Pan.).

Inhabits the Tropical Zone of western Colombia from the Pacific coast to the Cauca Valley. The determination of our specimens of this group has involved a prolonged study of topotypical material of all the forms concerned. The conclusions reached in regard to the distribution of *M. v. accola* and *M. v. pallens* are at variance with those presented by previous authors, and also apparently with the laws of distribution, but they are evidently supported by the specimens examined.

These indicate that *accola,* described from western Panama, ranges northward at least through Nicaragua, and although Panama Canal Zone (Lion Hill?) specimens are referable to *pallens* of northern Colombia, *accola* appears again in western Colombia.

The absence of records from Panama, east of Chiriqui, may be due to lack of specimens, to a hiatus in the range of this form, or to parallelism. If it occurs in the Canal Zone it must necessarily be restricted to the southern slope since specimens collected by McLeannan and Galbraith, doubtless at Lion Hill, are unquestionably referable to *pallens.* If it is not found in Panama east of Chiriqui we have not to resort to the theory of parallelism to account for its reappearance in Colombia, since we have numerous similar cases, though, it is true, they are chiefly among species of the Subtropical Zone.

However this may be, the fact remains that ten specimens from Chiriqui, Costa Rica and Nicaragua are not separable from fourteen specimens from western Colombia, while three from the Canal Zone are not separable from an equal number from Bonda, near Santa Marta, Colombia.

The characters by which *accola* may be distinguished from *pallens* are more grayish, less greenish borders to the yellow crown-patch, darker upperparts, and greater extension posteriorly of the grayish on the breast. The significant character, is, in my opinion, the color of the sides of the crown. In this respect *pallens* agrees with true *viridicata,* of which we have five specimens from Paraguay, while *accola* resembles *implacens,* of which we have four specimens from western Ecuador. This is in accord with the distribution of the two groups. That is, the green-headed birds from east of the Andes might be expected to occur in the Santa Marta region whence, as in many other species, they have evidently ranged westward to Panama, while the gray-headed birds are West Andean and range from the Pacific coast of Ecuador north to Central America.

Specimens from the Cauca and Magdalena Valleys are intermediate. The former are nearer *accola,* the latter, *pallens.* *Myiopagis viridicata implacens* (Scl.) of western Ecuador is a somewhat smaller bird than *accola* with the gray of the head more pronounced and darker. We have taken it in the same localities (vicinity of Guayaquil and Puna Island) as *M. subplacens,* a larger bird with a decidedly longer tarsus (tarsus 20–22 mm.), a well-defined superciliary and obscurely streaked throat and breast.

In some Colombian specimens of *accola* the tarsus might fairly be called pycnaspidean, the tarsal envelope being incomplete with, in several specimens, an indication of tubercles or papillæ, on its hinder margin. Others appear to be fairly exaspidean. If my diagnosis of this character is correct its variability in a single species strongly impugns its value in classification.

Los Cisneros, 3; Caldas, 2; Jiminez, 5; Pavas, 1; Rio Frio, 2.

Measurements of Males.

Name	Place	Wing	Tail	Tarsus	Culmen
M. v. accola	Matagalpa, Nic.	68	65	18	6
“ “ “	Rio Grande, “	68	62	18	6
“ “ “	Boquete, Chiriqui	71	61	19.5	6
“ “ “	Cisneros, Col.	69	64	19	6.5
“ “ “	“ “	70	63	18	6.5
“ “ “	Jiminez “	72	67	18	7
“ “ “	“ “	70	60	18.5	6.5
“ “ “	Pavas “	72	63	18.5	6
“ “ “	Rio Frio “	71.5	68	18	5.8
M. v. pallens	Panama (Lion Hill)	68	61	19	6.1
M. v. implacens	Puna, Ecuador	66.5	58	17.5	6.2
“ “ “	“ “	67	59	18	6.2
M. v. viridicata	Rio Negro, Paraguay	66	61	18	5
“ “ “	Trinidad	65.5	60	17	5.2

Measurements of Females.

Name	Place	Wing	Tail	Tarsus	Culmen
M. v. accola	W. Nicaragua	69	66	17	6.5
“ “ “	“	65	59	18.3	6.5
“ “ “	El General, Costa Rica	64	57	17	6
“ “ “	Los Cisneros, Col.	64	58.5	18	6.1
“ “ “	Caldas, “	68	61	17.5	6
“ “ “	Jiminez “	64	60	18	6.3
“ “ “	Rio Frio “	63	54	19	6
M. v. pallens	Panama (Lion Hill?)	63	57	18	6.2
“ “ “	Bonda, Col.	63	54	18	6.5
“ “ “	“	63	57.5	17.3	6
M. v. implacens	Manavi, Ecuador	64	53	17.5	6.8
“ “ “	Daule, “	62	54	17.5	6.2
M. v. viridicata	Trinidad, Paraguay	62.5	57	17	5

(2966) **Myiopagis viridicata pallens** *Bangs.*

Myiopagis placens pallens Bangs, Proc. N. E. Zool. Club, III, 1902, p. 85 (Santa Marta, Col.).

Myiopagis placens Allen, Bull. A. M. N. H., XIII, 1900, p. 148 (Bonda; Minca; Santa Marta).

Of two adult specimens from Honda one is wholly typical of *pallens*, the other, in its somewhat darker color above shows a slight approach toward *accola*. Topotypical specimens of *pallens* are very near Paraguayan specimens of *viridicata* but are slightly paler above and have larger bills. Both races agree in having the sides of the crown oil-green.

One of our Santa Marta specimens has distinct tubercles on the back of the tarsus, in others the tarsal envelope is essentially entire.

Honda, 2 ad., 1 juv.

(2977) **Legatus albicollis** (*Vieill.*).

Tyrannus albicollis Vieill., Nouv. Dict. d'Hist. Nat., XXXV, 1819, p. 89 (Paraguay).

Legatus albicollis Stone, Proc. Acad. N. S. Phila., 1899, p. 306 (Ambalema); Allen, Bull. A. M. N. H., XIII, 1900, p. 147 (Bonda; Minca; Jordan).

Legatus albicollis albicollis Hellm., P. Z. S., 1911, p. 134 (Tadó).

Occurs in the Tropical Zone and upward to the lower border of the Subtropical Zone.

Los Cisneros, 1; Las Lomitas, 1; San Antonio, 6; Cunday, Bogotá region, 1.

(2978) **Sublegatus glaber** *Scl. & Salv.*

Sublegatus glaber Scl. & Salv., P. Z. S., 1868, p. 171 (Venezuela); Wyatt, Ibis, 1871, p. 333 (Santa Marta); Allen, Bull. A. M. N. H., XIII, 1900, p. 147 (Bonda; Santa Marta).

Found by us only on the lower Magdalena River.

La Playa, 2; Algodonal, 1.

(2981) **Myiozetetes cayanensis cayanensis** (*Linn.*).

Muscicapa cayanensis Linn., Syst. Nat., I, 1766, p. 327 (Cayenne).

Elænia cayennensis Cass., Proc. Acad. N. S. Phila., 1860, p. 144 (Turbo).

Myiozetetes guianensis Wyatt, Ibis, 1871, p. 333 (between Canta and R. Magdalena).

Myiozetetes texensis Scl. & Salv., P. Z. S., 1879, p. 513 (Envigado; Medellin).

Myiozetetes cayennensis Robinson, Flying Trip, p. 160, (Barranquilla to Honda; Guaduas).

Myiozetetes cayennensis cayennensis Hellm., P. Z. S., 1911, p. 1134 (Nóvita; Calima).

We have found this to be a common species throughout tropical Colombia except at the eastern base of the Andes.

Dabeiba, 3; Quibdó, 2; Bagado, 4; Andagueda, 2; Baudo, 1; Juntas de Tamaná, 1; Nóvita, 2; San José, 2; Tumaco, 3; Barbacoas, 1; Puerto Valdivia, 3; Caldas, 2; San Antonio, 2; Cali, 1; Rio Frio, 1; Miraflores, 1; San Agustin, 3; w. slope below Andalucia (alt. 3000 ft.), 2; Fusugasugá, 1; Honda, 2; Puerto Berrio, 4.

(2983) **Myiozetetes similis columbianus** *Cab. & Hein.*

Myiozetetes columbianus Cab. & Hein., Mus. Hein., II, 1859, p. 62 (Carthagena).

Myiozetetes texensis colombianus Allen, Bull. A. M. N. H., XIII, 1900, p. 146 (Bonda; Minca; Sta. Marta; Cacagualito; Palomina).

Specimens from the Magdalena Valley agree with those in a large series from Bonda in the Tropical Zone near Santa Marta which may be considered as typically representing this form, since it was based on specimens from the Caribbean coast both to the east and west of Santa Marta (Puerto Bello, Venezuela; Carthagena, Colombia). Although we have specimens of *columbianus* from Esmeraldas and southward in the coast region of Ecuador, it does not appear to have been recorded from the Pacific coast of Colombia. Some specimens from the vicinity of Merida, Venezuela, mark the first steps of intergradation between *columbianus* and *similis* in the slightly rufous edgings to the central wing-quills and buffy tint of the wing-linings, and a further approach toward the Brazilian form is found in specimens from Villavicencio and La Morelia. *Myiozetetes similis* therefore, as previous authors have already suggested, evidently ranges from Brazil to Mexico and the northern form should stand as *Myiozetetes similis texensis*.

Remedios, lower Magdalena, 1; Chicoral, 2; w. slope below Andalucia (alt. 3000 ft.), 1.

(2983*a*) **Myiozetetes granadensis** *Lawr.*

Myiozetetes granadensis Lawr., Ibis, 1862, p. 11 (Panama, R. R.).

Not common but doubtless occurs throughout the greater part of tropical Colombia. An immature male, lacking the orange and scarlet crest, from Villavicencio and a female from the Cunucunuma River (near the head of the Orinoco) are darker than Panama birds (including the types) above and deeper yellow below, while the crown is more strongly striped. In color they agree with a specimen from Barbacoas (*cf.* von Berlepsch, Nov. Zool., 1902, p. 46).

Alto Bonito, 2; Bagado, 1; San José, 1; Barbacoas, 1; Calamar, 1; Villavicencio, 1.

(2984) **Myiozetetes similis connivens** *Berl. & Stolz.*

Myiozetetes connivens Berl. & Stolz., Ornis, XIII, 1906, p. 87 (La Merced, Chanchamayo, Peru).

Specimens from the eastern base of the Andes are clearly not to be referred to the form which occupies the entire Caribbean coast and westward to Costa Rica. The central wing-quills are more rufous, the wing-lining more cinnamon, and in the coloration of these parts they are nearer Bahia specimens than to true *columbianus*. These characters are particularly well shown in a freshly plumaged bird taken at La Morelia, July 11, but the more worn condition of birds taken at Buena Vista and Villavicencio in March, has left but little rufous on the external margin of the quills, though the cinnamon color of the inner margins is sufficiently pronounced to differentiate them from *columbianus*. The freshly plumaged Morelia bird differs from a comparable specimen from eastern Brazil in having the back more olive, the throat more yellow and apparently therefore agrees with the form from eastern Peru to which, in the absence of Peruvian specimens, I have provisionally referred it.

La Morelia, 1; Buena Vista, 1; Villavicencio, 3.

(2990) **Conopias cinchoneti** (*Tsch.*).

Tyrannus cinchoneti Tsch., Faun. Per., 1844–5, p. 151, pl. viii, fig. 2 (Peru).

A not common species in the Subtropical Zone of all three ranges. In default of material, our birds have not been compared with specimens from Peru.

La Frijolera, 1; Rio Lima, 1; Miraflores, 1; Aguadita, 1.

(2991) **Pitangus sulphuratus rufipennis** (*Lafr.*).

Saurophagus rufipennis Lafr., Rev. Zool., 1851, p. 471 (Caracas, Venezuela).

Pitangus rufipennis Wyatt, Ibis, 1871, p. 333 (Cienaga; Barranquilla).

Pitangus derbianus rufipennis Allen, Bull. A. M. N. H., XIII, 1900, p. 146 (Bonda; Santa Marta; Valle Dupar).

Specimens from the Magdalena Valley average somewhat darker than those from the coast of Colombia and Venezuela but are clearly to be referred to *rufipennis*.

La Playa, 2; Calamar, 4; Honda, 2; Chicoral, 1; w. slope below Andalucia (alt. 3000 ft.), 1.

(2992) **Pitangus sulphuratus** subsp.

Lanius sulphuratus Linn., Syst. Nat., I, 1766, p. 137 (Cayenne).

Two specimens of *Pitangus sulphuratus* from Villavicencio, at the eastern base of the Andes, do not agree exactly with any described form of this variable species. They are intermediate between true *sulphuratus* and *rufipennis* and thus are near *trinitatis*, from which indeed they differ only in having the rufous and fuscous areas of wings and particularly tail more sharply defined. The character is obvious enough, and, if constant, would warrant the separation of the Villavicencio bird. A specimen from Maripa on the lower Orinoco and another from the Orinoco delta agree with the two from Villavicencio, while three from Trinidad are alike in their ill-defined tail-pattern.

Villavicencio, 2.

2992*a*. **Pitangus sulphuratus caucensis** *Chapm.*

Pitangus sulphuratus caucensis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 179 (Cali, Col.).

Char. subsp.— In the extent of rufous markings most nearly resembling *P. s. rufipennis;* in general color nearer *P. s. sulphuratus.*

This form appears to be restricted to the Cauca Valley. Occupying a region in which the humidity more nearly resembles that of Trinidad and the Guianas than it does that of the arid coastal zone of northern South America, the characters of *caucensis* in a degree parallel the resemblance in climatic conditions existing between the Cauca Valley and northeastern South America.

Cali, 6; Florida, 1; Rio Frio, 1.

(2996) **Pitangus lictor** (*Licht.*).

L[anius] lictor Licht., Verz. Doubl., 1823, p. 49 (Pará).

Saurophagus lictor Cass., Proc. Acad. N. S. Phila., 1860, p. 143 (R. Atrato; R. Truando).

Pitangus lictor Allen, Bull. A. M. N. H., XIII, 1900, p. 146 (Cacagualito).

Boca de Chimi, lower Magdalena, 1.

(3001) **Sirystes albocinereus** *Scl. & Salv.*

Sirystes albocinereus Scl. & Salv., P. Z. S., 1880, p. 156 (Bogotá).

Barrigon, 1.

(3003) **Myiodynastes maculatus nobilis** *Scl.*

Myiodynastes nobilis Scl., P. Z. S., 1859, p. 42 (Santa Marta); Wyatt, Ibis, 1871, p. 333 (Bucaramanga).

Myiodynastes audax Scl. & Salv., P. Z. S., 1879, p. 514 (Sta. Elena; Frontino).

Myiodynastes audax nobilis Allen, Bull. A. M. N. H., XIII, 1900, p. 145 (Bonda; Minca; Cacagualito; Manaure; Valle Dupar; Santa Marta).

A common species in the Tropical Zone. Our specimens have been compared with a large series from Santa Marta, the type-locality.

Alto Bonito, 1; Dabeiba, 3; Puerto Valdivia, 3; La Manuelita, 2; Chicoral, 3; Puerto Berrio, 2; Malena, 1; Calamar, 2.

(3005*a*) **Myiodynastes luteiventris** *Scl.*

Myiodynastes luteiventris Scl., P. Z. S., 1859, p. 42 (Orizaba, Mexico).

A female taken at Chicoral in the upper Magdalena Valley, October 11, is apparently typical of this species. It is interesting to note that *Myiodynastes maculatus nobilis* was also taken at Chicoral on October 11.

Chicoral, 1.

(3007) **Myiodynastes chrysocephalus minor** *Tacz. & Berl.*

Myiodynastes chrysocephalus minor Tacz. & Berl., P. Z. S., 1885, p. 91 (Machay; Mapoto, Ecuador).

Myiodynastes chrysocephalus Scl. & Salv., P. Z. S., 1879, p. 514 (Concordia).

Inhabits the Subtropical Zone of all three ranges. While somewhat larger than true *minor* of Ecuador, the Colombian birds essentially agree with it in color.

La Frijolera, 2; Las Lomitas, 21; San Antonio, 3; Miraflores, 1; Salento, 3; near San Agustin, 3; La Palma, 2; Andalucia (3000 ft.), 3; Buena Vista (above Villavicencio), 1.

(3006) **Megarhynchus pitangua** (*Linn.*).

Lanius pitangua Linn., Syst. Nat. I, 1766, p. 136 (Brazil).

Megarhynchus pitangua Allen, Bull. A. M. N. H., XIII, p. 145 (Bonda; Minca; Atanques; Santa Marta; Palomina).

Our collection contains only a single specimen of this common and widely distributed species. It was taken at Chicoral.

Chicoral, 1.

(3008*a*) **Onychorhynchus coronatus castelnaudi** *Dev.*

Onychorhynchus castelnaudi Dev., Rev. et Mag. Zool., 1849, 56 (Sarayacu, Rio Ucayali, e. Peru).

An adult male collected by Ring at Villavicencio differs from a British Guiana specimen in being smaller (wing, 73 mm.), the back is browner, the belly deeper ochraceous, the tail more rufescent basally, and the upper tail-coverts are practically unbarred. An immature specimen from "Napo" agrees with the Villavicencio bird in size, and in lacking the conspicuous bars on the tail-coverts which characterize *coronatus*. I have no Peruvian specimens but the type-locality of *castelnaudi* lies in the same faunal zone as Napo, and it is therefore more than probable that the Villavicencio bird agrees with the Peruvian form.

Villavicencio, 1.

(3013) **Hirundinea sclateri** *Reinh.*

Hirundinea sclateri Reinh., Fuglef. Bras. Camp, 1870, p. 337 (Peru).

A pair of birds of this apparently not common species was collected on an arid part of the trail between Quetame and Buena Vista, in the Eastern

Andes, at an altitude of about 4600 feet. No others were observed. I have no Peruvian specimens for comparison.

(3016) **Cnipodectes minor** *Scl.*

Cnipodectes minor Scl., P. Z. S., 1883, p. 654 (Chamicuros, Peru).

Two specimens from La Morelia represent this species of which I have seen no Peruvian specimens. They measure as follows.

Sex	Wing	Tail	Tarsus	Culmen
♂	84	75	18	16
♀	74	65	17	14

(3017) **Myiobius barbatus barbatus** (*Gmel.*).

Muscicapa barbata Gmel., Syst. Nat., I, 1789, p. 933 (Cayenne).

Inhabits the humid Tropical Zone at the eastern base of the Eastern Andes. Four specimens agree with a series from British Guiana.

Florencia, 3; La Morelia, 1.

(3018) **Myiobius barbatus atricaudus** *Lawr.*

Myiobius atricaudus Lawr., Ibis, 1863, p. 183 (Panama R. R. Line; type examined).

Myiobius barbatus Scl. & Salv., P. Z. S., 1879, p. 514 (Sta. Elena!).

This well-named race evidently occupies all of the humid Tropical Zone west of the Eastern Andes and penetrates the Cauca Valley at least as far as Rio Frio. I detect no racial differences in a series of twenty-nine specimens (including the type) from Costa Rica south to near Guayaquil.

Dabeiba, 1; Caldas, 2; Barbacoas, 3; Rio Frio, 1; Malena, 1.

(3020) **Myiobius villosus** *Scl.*

Myiobius villosus Scl., P. Z. S., 1860, p. 93 (Nanegal, w. Ecuador).

I refer to this species three specimens from the lower part of the Subtropical Zone in the Western Andes of southwest Colombia. They agree with Sclater's original description and differ from the form of the Tropical Zone, which I call *Myiobius sulphureipygius aureatus* Bangs, in its larger size, darker back, browner head (particularly in the female, which has the crown largely buckthorn-brown) brownish instead of yellow under wing-coverts, and especially, in the color of the underparts, which are olive old-gold or light orange-citrine, more olivaceous, therefore, than the breast of *aureatus*. This color covers not only the breast but the sides and flanks and to some extent under tail-coverts and is consequently much less restricted than the corresponding color in *aureatus*, the yellow being confined to the upper throat and chin, and center of the abdomen. Sclater's original description (*l. c.*) reading in part "pilei cristati plumis rufis, medialiter aureis: Subtus fulvo-brunneus, gutture et ventre medio flavescentionbus" clearly applies to this bird rather than to the Tropical Zone form in which the whole abdomen and a large part of the flanks are yellow. Furthermore, as the appended table indicates his measurements fit the subtropical rather than tropical bird, and it is also of importance to note that his type came from the first-named zone.

Although this bird seems clearly a zonal representative of *aureatus* it nevertheless appears to be specifically distinct. Specimens from localities, which like Barbacoas and Ricaurte are in approximately the same latitude and are separated by only a few miles of space but by some 5000 feet of altitude, show no sign of intergradation. On the other hand we have a Bogotá skin, labeled by Sclater *villosus*, which agrees with our Ricaurte specimens in pattern, but has the brown of the underparts of the same shade as in *aureatus*. It would be most interesting to know whence this specimen came. A male from Inca Mine, Peru, resembles the Ricaurte specimen but is duller below and has the rump paler yellow.

Cocal, 1; Ricaurte, 3.

Measurements.

Name	Locality	Sex	Wing	Tail
M. sulphureipygius aureatus	Alto Bonito, Col.	♂	65	52
" " "	Nóvita, "	♂	64	52
" " "	Barbacoas	♂	58	47
" " "	Manavi, Ecuador	♂	65	55
" " "	Alto Bonito, Col.	♀	61	49
" " "	Juntas de Tamaná, Col.	♀	59	47
" " "	Nóvita, Col.	♀	58	48
" " "	Manavi, Ecuador	♀	61	49
M. villosus	Ricaurte, Col.	♂	69	58
" "	" "	?	65	57
" "	Cocal, Col.	♀	67	57
" "	Nanegal, Ecuador[1]	?	71	62

(3020*a*) **Myiobius sulphureipygius aureatus** *Bangs.*

Myiobius xanthopygus aureatus Bangs, Proc. N. E. Zoöl. Club, IV, 1908, p. 27 (Divala, Chiriqui, Panama).

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[1] *Ex* Sclater.

Myiobius sulphureipygius Cass., Proc. Acad. N. S., Phila., 1860, p. 144 (R. Truando).
Myiobius villosus Scl. & Salv., P. Z. S., 1879, p. 514 (Frontino).
Myiobius sulphureipygius villosus Hellm., P. Z. S., 1911, p. 1135 (Nóvita).

This form appears to be restricted to the Tropical Zone of the Pacific coast ranging northward to Costa Rica and southward to southwestern Ecuador. After close examination of our thirty-six specimens from this region, including seven from Costa Rica and six from Ecuador, I feel that they should all be referred to one race. The more southern specimens average somewhat more richly colored but the difference is slight and repeatedly bridged by individual variation.

Hellmayr (*l. c.*) applies the name *villosus* to a specimen from Nóvita (whence we also have specimens), but I have given above what I trust will be accepted as conclusive reasons for believing that that name should be used for a quite different bird. Our specimens from Alto Bonito lead me to believe that Sclater and Salvin's record of *M. villosus* from Frontino should be placed under this form.

Alto Bonito, 4; Chocó, 3; Baudo, 2; Nóvita, 2; Juntas de Tamaná, 2; San José, 1; Barbacoas, 2.

(3022*a*) **Myiobius cinnamomeus pyrrhopterus** *Hartl.*

Myiobius pyrrhopterus Hartl., Rev. Zoöl., 1843, p. 289 (New Grenada).
Myiobius cinnamomeus Scl. & Salv., P. Z. S., 1879, p. 514 (Concordia; Sta. Elena).

A common species in the Subtropical Zone of all three ranges. Comparison of our forty-eight Colombian specimens with six from Bolivia and Peru shows that the former differ constantly from the latter in the smaller size, paler, narrower rump-band and greener back. Thus, as Hartlaub (*l. c.*) put it some seventy years ago, the Colombian bird is "voisine de la *Muscipeta cinnamomea,* d'Orb. et Lafr., mais bien differente." Old 'Bogotá' skins do not appear to differ from recently collected ones.

San Antonio, 6; Cerro Munchique, 7; Crest of Andes, w. of Popayan, 1; Cocal, 3; Almaguer, 2; Miraflores, 1; Salento, 5; Sta. Elena, 5; Laguneta, 1; Rio Toché, 1; El Eden, 1; La Palma, 8; La Candela, 3; Andalucia, 1; Aguadita, 3; El Roble, 4; Chipaque (8500 ft.), 1.

(3033) **Myiobius flavicans** *Scl.*

Myiobius flavicans Scl., P. Z. S., 1860, p. 464 (Pallatanga, Ecuador); Scl. & Salv., *Ibid.*, 1879, p. 514 (Sta. Elena).

Inhabits the Subtropical Zone of all three ranges. I can detect no racial differences in our series of nineteen specimens. Old 'Bogotá' skins are somewhat browner above and paler below than recently collected ones from the Bogotá region. Five specimens from Zaruma, southern Ecuador, which doubtless are typical of *flavicans,* are somewhat more olivaceous and slightly deeper yellow below, and a little browner above and average slightly smaller than Colombian birds.

San Antonio, 2; Cerro Munchique, 2; La Florida, 1; Cocal, 1; Gallera, 1; Salento, 3; Sta. Elena, 5; Tochecito, 1; Rio Toché, 1; El Eden, 4; Fusugasugá, 1; El Roble, 2.

(3035) **Myiobius litæ** *Hart.*

Myiobius litæ Hart., Bull. B. O. C., XI, 1901, p. 40 (Lita, n. w. Ecuador).

A male from the Nóvita Trail agrees with the description of this species of which I have seen no authentic specimens. It seems not to have been previously recorded from Colombia.

Nóvita Trail, 1.

(3037) **Myiobius pulcher pulcher** *Scl.*

Myiobius pulcher Scl., P. Z. S., 1860, p. 464 (Quito).

Specimens from the Western Andes have the head grayer, but otherwise agree with others from Quito, and differ from Bogotá region birds in having the margins to the inner wing-quills less ochraceous in color, the breast paler.

Gallera, 1; Cocal, 2.

(3038) **Myiobius pulcher bellus** *Scl.*

Myiobius bellus Scl., P. Z. S., 1862, p. 111 (Bogotá).

Specimens from Aguadita and El Roble doubtless typically represent this form which is but slightly differentiated from *M. pulcher* of Quito and western Colombia, the breast being somewhat more fulvous, the wing-bars and margins to the inner quills more ochraceous. Old 'Bogotá' skins are essentially like fresh ones.

Aguadita, 2; El Roble, 2.

(3040) **Myiobius fasciatus fasciatus** (*Müll.*).

Muscicapa fasciatus P. L. S. Mull., Syst. Nat., Suppl., 1766, p. 172 (Cayenne).

Myiobius nævius Wyatt, Ibis, 1871, p. 333 (Ocaña); Scl. & Salv., P. Z. S., 1879, p. 514 (Medellin); Allen, Bull. A. M. N. H., XIII, 1900, p. 145 (Minca; Pueblo Viejo; Palomina).

An inhabitant of scrubby growth in the Tropical Zone which ranges upward to the lower border of the Subtropical Zone. Colombian specimens agree in averaging yellower below than those in a good series from Trinidad and thus approach the Panama form, *M. f. furfurosus.*

Caldas, 2; Las Lomitas, 2; San Antonio, 1; Salento, 1; Andalucia (w. slope, 5000 ft.), 1; Honda, 1; Quetame, 1.

(3026) **Terenotriccus erythrurus fulvigularis** (*Salv. & Godm.*).

Myiobius fulvigularis Salv. & Godm., Biol. Cen.-Am., Aves, II, 1889, p. 58. (Santa Fé, Panama).

Myiobius erythrurus fulvigularis Hellm., P. Z. S., 1911, p. 1136 (Juntas, Rio Tanamá).

Occupies the Tropical Zone of the Pacific coast and eastward into Antioquia. Our specimens agree with others from Panama.

Alto Bonito, 2; San José, 2; Puerto Valdivia, 2.

(3029) **Myiotriccus ornatus ornatus** (*Lafr.*).

Tyrannula ornata Lafr., Rev. Zool., 1853, p. 57 (Colombia).

Specimens from Fusugasugá, Subia, and from the Central Andes twenty miles west of Honda are typical of this form. Specimens from the lower Cauca approach *stellatus* in their smaller size but are nearer *ornatus.* Old 'Bogotá' skins differ from recently collected ones in having the yellow areas paler.

La Frijolera, 4; Fusugasugá, 4; Subia, 1; west of Honda, 1.

3.7

(3030) **Myiotriccus ornatus stellatus** (*Cab.*).

Myiobius stellatus Cab., J. f. O., 1873, p. 158 (Ecuador).

Specimens from the Pacific Coast region, chiefly from the Tropical Zone, appear to be referable to this form, but the variation shown by three specimens from Ecuador leaves me somewhat in doubt as to the true characters of *stellatus.* A specimen from Lita, northwestern Ecuador, secured through the Tring Museum is labelled '*stellatus,*' and one from 'western Ecuador' received from von Berlepsch is similarly named. Both have the breast olive-green, as broadly so in the Lita specimen as in any example of true *ornatus.* But a bird collected by Richardson at Rio de Oro, Manavi, has almost no olive-green on the breast, at least centrally, where the gray of the throat and yellow of the belly are in contact. If the Lita specimen is true *stellatus* our western Colombia examples may be properly referred to that form; if the Rio de Oro specimen is true *stellatus* then our western Colombia specimens are intermediate between *stellatus* and *ornatus*. They agree with *stellatus* in size and in the absence of a continuous white frontal band, but in their olive-green breast and amount of rufous in the tail are like *ornatus*.

Chocó (probably either Bagado or Andagueda), 1; Nóvita Trail (alt. 4000 ft.), 1; Gallera, 2; Cocal, 2; Buenavista, Nariño, 6.

Measurements.

			Wing	Tail
Fusugasugá,	Col.,	3 males	61–66	45–47
"	"	♀	57	41
La Frijolera,	"	3 males	59–62–5	44
"	"	♀	58.5	39.5
Chocó,	"	♂	54	39
Nóvita Trail,	"	♂	58	41
Gallera,	"	2 males	58–59	39
"	"	♀	53.5	36
Cocal,	"	2 males	57	38–41
"	"	♀	54	36
Buenavista,	"	3 males	53–57	37–38
"	"	♀	53	35
Lita, Ecuador,	"	♂	56	37
Rio de Oro,	"	♀	54	36

(3031) **Myiotriccus phœnicurus** (*Scl.*).

Tyrannulus phœnicura Scl., P. Z. S., 1854, p. 113, pl. 66, fig. 1 (Rio Napo, Ecuador).

A single specimen from the eastern slope of the Eastern Andes (alt. 2500 ft.), below Andalucia.

(3044) **Pyrocephalus pyrocephalus rubinus** (*Bodd.*).

Muscicapa rubinus Bodd., Tabl. Pl. Enl., 1783, p. 42 (Brazil).

In its heavily streaked white underparts, showing no trace of pink (the crissum being yellow); a female from La Morelia agrees with this race.

La Morelia, 1.

(3046) **Pyrocephalus rubinus heterurus** *Berl. & Stolz.*

Pyrocephalus rubineus heterurus Berl. & Stolz., P. Z. S., 1892, p. 381 (Lima).

Pyrocephalus rubineus Scl. & Salv., P. Z. S., 1879, p. 515 (Medellin); Stone, Proc. Acad. N. S. Phila., 1899, p. 306 (Ambalema).

Pyrocephalus rubinus Allen, Bull. A. M. N. H., XIII, 1900, p. 144 (Valencia).

A common inhabitant of arid, semi-arid or cleared and bush-grown places in the Tropical Zone, throughout the greater part of Colombia. We have taken it at Tumaco but at no other point on the Pacific coast, Caldas, being faunally a part of the Cauca Valley rather than of the coast region. Topotypical (Lima) specimens of *heterurus* are larger, and the female appears to be more richly colored than specimens from Ecuador and western Colombia, but I have not sufficient Peruvian material to reach satisfactory conclusions in this connection.

Although this Flycatcher doubtless occurs at Villavicencio we did not secure specimens, and I am unable therefore to state whether birds from that part of Colombia show any approach to the well-marked *P. r. saturatus* of Orinocan Venezuela.

Tumaco, 5; Caldas, 3; San Antonio, 1; Cali, 9; La Manuelita, 2; Miraflores, 1; Popayan, 1; w. slope (alt. 3000 ft.) below Andalucia, 2; Chicoral, 2; Honda, 1.

(3050) **Empidochanes cabanisi** (*Léot.*).

Empidonax cabanisi Léot., Ois. Trin., 1866, p. 232 (Trinidad).

Empidochanes cabanisi Allen, Bull. A. M. N. H., XIII, 1900, p. 144 (Valparaiso).

Boca de Chimi, lower Magdalena, 1.

(3051) **Empidochanes pœcilurus** *Scl.*

Empidochanes pœcilurus Scl., P. Z. S., 1862, p. 112 (Bogotá).

Knipolegus columbianus Chapm., Bull. A. M. N. H., XXXI, 1912, p. 151 (Andes. west of Popayan).

The receipt of additional specimens of this bird from a locality far removed from that whence I had described "*Knipolegus columbianus*", induced the belief that, although the type of that "species" had been examined by and was unknown to most of the leading ornithologists of this country, it represented a species which had been previously described. Specimens were therefore submitted to Count von Berlepsch who revealed its true identity.

I still fail, however, to appreciate the bird's relationships to typical members of the genus *Empidochanes* and as before suggested (*l. c.*) feel that it deserves generic separation. This species evidently occurs in the Subtropical Zone of all three ranges.

Andes west of Popayan, 1; Santa Elena, 1; La Candela, 1; La Palma, 2; near San Agustin, 1.

(3057*a*) **Mitrephanes berlepschi eminulus** *Nels.*

Mitrephanes eminulus Nels., Smith. Misc. Coll., LX, No. 3, 1912, p. 13 (Cana, e. Panama).

After comparison with five essentially topotypical specimens of *eminulus*, from Tacarcuna, eastern Panama, I refer to that form a specimen from Monquido, a station in the Atrato Valley visited by Mrs. Kerr which I have not been able to locate, and a fully adult male from Alto Bonito on the western slope of the Western Andes above this valley. The first-named specimen has somewhat less fulvous on the breast than the Panama specimens, and in the Alto Bonito bird there is a still further reduction of this color, the breast being largely olive, while the abdomen is a brighter yellow. I have no doubt that this bird is separable from *eminulus*, but in the absence of specimens of the western Ecuador form, *berlepschi*, of which *eminulus* appears to be merely a race, I provisionally refer it to the Panama form.

The affinities of this species appear to me to be with *M. aurantiiventris* of western Panama and Costa Rica, which differs chiefly through an increase in the intensity and extent of the fulvous coloring, rather than with *M. olivaceus* of eastern Peru, a much larger bird with olivaceous breast and abdomen.

Monquido, Chocó, 1; ? Alto Bonito, 1.

(3058) **Sayornis nigricans cineracea** (*Lafr.*).

Tyrannula cineracea Lafr., Rev. Zool., 1848, p. 7 (Caracas, Venezuela).

Sayornis ardosiacus Cass., Proc. Acad. N. S. Phila., 1860, p. 144 (Truando).

Sayornis cineracea Wyatt, Ibis, 1871, p. 332 (Ocaña; Cocuta Valley); Scl. & Salv., P. Z. S., 1879, p. 511 (Medellin; Frontino); Allen, Bull. A. M. N. H., XIII, 1900, p. 151 (Cacagualito; Onaca).

Sayornis nigricans Stone, Proc. Acad. N. S. Phila., 1899, p. 306 (Ibagüe).

Sayornis cineracea cineracea Hellm., P. Z. S., 1911, p. 1125 (Pueblo Rico).

An inhabitant of the Tropical Zone but working up the streams to the lower border of the Subtropics. It appears to be locally distributed throughout the greater part of tropical Colombia, though we have taken no specimens in the Cauca Valley. The smallest birds come from the eastern slope of the Eastern Andes, the largest from the Pacific Coast.

San José, 1; Los Cisneros, 2; Caldas, 1; Salento, 2; Rio Toché, 4; near San Agustin, 1; w. slope below Andalucia (alt. 3000 ft.), 8; Quetame, 7.

(3066) **Empidonax virescens** (*Vieill.*).

Platyrhynchus virescens VIEILL., Nouv. Dict. d'Hist. Nat., XXVII, 1818, p. 22 (near Philadelphia, Pa.).

Empidonax virescens HELLM., P. Z. S., 1911, p. 1136 (Pueblo Rico; Sipi); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 143 (Bonda; Valparaiso).

Taken only west of the Central Andes. December specimens are much yellower below than those taken in February and March.

Juntas de Tamaná, 2, Dec. 18, 20; Los Cisneros, 1, Mch. 20; Las Lomitas, 3, Feb. 27–Mch. 6; San Antonio, 2, Feb. 16, 21; Rio Frio, 1, Nov. 24; Puerto Valdivia, 1, Dec. 14.

(3064*a*) **Empidonax trailli alnorum** *Brewst.*

Empidonax traillii alnorum BREWST., Auk, XII, 1895, p. 161 (Upton, Me.).

Found only in the Tropical Zone. Two of our specimens might as readily be referred to *trailli* as to *alnorum*, and few represent the extreme type of *alnorum*, but the series as a whole is nearer to *alnorum* than to *trailli*.

Dabeiba, 1, Feb. 26; Turbaco, 1, Aug. 15; Calamar, 2, Nov. 4, Jan. 21; Puerto Berrio, 1, Jan. 29; Honda, 3, Feb. 6–8.

(3069) **Myiochanes ardosiacus ardosiacus** (*Lafr.*).

Tyrannula ardosiaca LAFR., Rev. Zoöl., 1844, p. 80 (Colombia).

Contopus ardesiacus SCL. & SALV., P. Z. S., 1879, p. 515 (Medellin; Sta. Elena).

Inhabits the Subtropical Zone of all three ranges. I can detect no racial differences.

Paramillo Trail (10,000 ft.), 1; San Antonio, 2; Cerro Munchique, 1; Gallera, 1; Ricaurte, 2; Buenavista, Nariño, 1; Salento, 1; Rio Toché, 1; La Palma, 1; near San Agustin, 2; La Candela, 2; Fusugasugá, 4; Aguadita, 3; El Roble, 1; Palo Hueco, 1.

(3071) **Myiochanes virens** (*Linn.*).

Muscicapa virens LINN., Syst. Nat., I, 1766, p. 327 (Carolina).

Contopus virens ALLEN, Bull. A. M. N. H., XIII, 1900, p. 142 (Valparaiso; Cacagualito; Santa Marta).

A specimen taken at Dabeiba, one at San Agustin, May 4 (a surprisingly late date), and two from Villavicencio are typical of this species.

We have also a specimen from La Frijolera, Jan. 3, one from Salencio

(Dec. 10), and two from Buenavista (Mch. 1 and 18), which are so fairly intermediate between *virens* and *richardsoni* that neither Mr. Waldron Miller nor I can refer them with certainty to either of these species.

Dabeiba, 1, Feb. 13; San Agustin, 1, May 4; Villavicencio, 2, Mch. 11, 13.

(3072) **Myiochanes richardsoni** (*Swains.*).

Tyrannula richardsoni Swains., Fauna Bor.-Am. II, 1831, p. 146, pl. 46 (Cumberland House, Saskatchewan).

Myiochanes richardsonii richardsonii Hellm., P. Z. S., 1911, p. 1136 (Loma Hermosa).

Four specimens which can unquestionably be referred to this species show that it doubtless occurs throughout tropical Colombia. As remarked under the preceding species, in addition to the specimens listed below, we have two from Buenavista and one from Salencio which neither Mr. Waldron Miller nor I can refer satisfactorily either to *richardsoni* or *virens*.

Chocó, 1; Buenavista, Nariño, 1, Sept. 28; near San Agustin, 1, Apl. 16; Buena Vista (above Villavicencio), 2, Mch. 1 and Mch. 7.

(3072*a*) **Myiochanes brachytarsus** (*Scl.*).

Empidonax brachytarsus Scl., Ibis, 1859, p. 441 (Mexico).

Contopus brachytarsus Allen, Bull A. M. N. H., XIII, 1900, p. 143 (Minca; Cacagualito; Santa Marta).

A single specimen from El Consuelo above Honda.

(3079) **Myiarchus crinitus** (*Linn.*).

Turdus crinitus Linn., Syst. Nat., I, 1758, p. 170 (Carolina).

Myiarchus crinitus Hellm., P. Z. S., 1911, p. 1137 (Nóvita; Noanamá); Allen, Bull. A. M. N. H., XIII, 1900, p. 142 (Bonda).

Noanamá, 1, Dec. 30; Puerto Valdivia, 3, Dec. 14–22; La Manuelita, 1; April 12.

(3080) **Myiarchus tyrannulus tyrannulus** (*Müll.*).

Muscicapa tyrannulus Müll., Syst. Nat. Suppl., 1776, p. 169 (Cayenne).

A specimen in excessively worn plumage from La Playa represents this species.

La Playa, 1.

(3085*a*) **Myiarchus fortirostris** *Todd.*

Myiarchus fortirostris Todd., Proc. Biol. Soc. Wash., XXVI, 1913, p. 171 (Prov. del Sara, Bolivia).

Mr. Oberholser identifies a male from Florencia as agreeing essentially with a National Museum specimen from "E. Peru" which has been compared with the type. The Peruvian specimen is somewhat faded, a fact which doubtless accounts for its being slightly paler than the Colombian bird. This record materially extends the known range of this recently described species.

Florencia, 1.

(3086) **Myiarchus (ferox?) venezuelensis** *Lawr.*

Myiarchus venezuelensis Lawr., Proc. Acad. Nat. Sci. Phila., 1865, p. 38 (Venezuela).

Count von Berlepsch (Nov. Zool., 1902, p. 51) has identified as *Myiarchus ferox venezuelensis* Lawr., certain specimens of *Myiarchus* from the middle lower Orinoco and comparison of our specimens from the same region with Lawrence's type confirms his views, so far as subspecific relationship is concerned, but in the absence of material I am unable to make comparison with true *ferox.*

I now refer to this form five specimens from Villavicencio and three from La Morelia and Florencia which, although they average darker above than the Orinoco birds and have the bill shorter and broader, the belly deeper yellow than the type, are evidently the representatives of *venezuelensis* which, having been described merely as from 'Venezuela,' would appear to come from the Orinoco region of that country and to range westward through Colombia to the Andes. The La Morelia and Florencia birds are somewhat darker than those from Villavicencio. The difference is in part due to their fresher plumage and is in part no doubt racial.

Villavicencio, 5; La Morelia, 2; Florencia, 1.

(3087) **Myiarchus (ferox?) panamensis** *Lawr.*

Myiarchus panamensis Lawr., Ann. Lyc. Nat. Hist. N. Y., VII, 1862, p. 284 (Panama).

Myiarchus ferox Cass., Proc. Acad. N. S. Phila., 1860, p. 143 (Falls of Truando); Allen, Bull. A. M. N. H., XIII, 1900, p. 142 (Bonda; Santa Marta).

Myiarchus erythrocercus Wyatt, Ibis, 1871, p. 333 (Santa Marta).

Myiarchus tyrannulus Scl. & Salv., P. Z. S., 1879, p. 515 (Retiro; Concordia; Sta. Elena).

Our birds agree with *panamensis* but in default of a topotypical series of *ferox* I am unable to discuss their relation to that form. Ridgway (Bull. 50, IV, p. 612) makes *panamensis* a subspecies of *ferox;* von Berlepsch (Int. Orn. Con., 1907, p. 477) treats it as a species. It doubtless occurs throughout the greater part of the Tropical Zone west of the Eastern Andes, frequenting open or semi-arid places. Two specimens from Tumaco are grayer above than average Panama specimens, but are nearly matched by a specimen from La Chorrera, near the southern end of the Canal Zone.

Tumaco, 2; Bagado, 1; Malena, 1; Puerto Berrio, 2; Chicoral, 1; Turbaco, 1.

(3088) **Myiarchus cephalotes** *Tacz.*

Myiarchus cephalates Tacz., P. Z. S., 1879, p. 671 (Tambillo, Peru).

Fourteen specimens, all from the Subtropical Zone of the Western and Central Andes, should apparently be referred to this species, which appears not to have been previously recorded from north of Ecuador. For comparison I have only a single specimen of *cephalotes* from the province of Huánuco, Peru, with which, allowing for differences due to the worn condition of the Peruvian bird, our series agrees. Seventeen specimens from the Tropical Zone of western Ecuador are all referable to *M. phæocephalus,* easily distinguished from *cephalotes* by its olive-gray back, and blackish crown. It is possible that this species may be a zonal representative of *ferox,* but all the birds in our series can readily be distinguished from *ferox panamensis* (which occurs in the Tropical Zone of the same range of the Andes whence came our specimens of *cephalotes*), by their blacker mandibles, darker wings and tail, and, particularly, by the conspicuous, whitish margins to the outer vanes of the tertials and outer pair of tail-feathers.

Cerro Munchique, 1; Miraflores, 3; Salento, 4; Sta. Elena, 2; Rio Toché, 1; El Eden, 2; La Candela, 1; La Palma, 1.

(3092) **Myiarchus apicalis** *Scl. & Salv.*

Myiarchus apicalis Scl. & Salv., Ibis, 1881, p. 269 (Bogotá).

This is an inhabitant of the Tropical Zone from Caldas to the Magdalena Valley. Birds from the Cauca region are materially larger and have larger bills than those from the Bogotá region.

Caldas, 1; Las Lomitas, 2; San Antonio, 3; Cali, 2; Chicoral, 1; Honda, 4; El Consuelo (above Honda), 1.

(3093) **Myiarchus tuberculifer nigriceps** (*Scl.*).

Myiarchus nigriceps Scl., P. Z. S., 1860, p. 68 (Pallatanga, Ecuador); Wyatt, Ibis, 1871, p. 333 (Ocaña to Bucaramanga); Allen, Bull. A. M. N. H., XIII, 1900, p. 143 (Minca; Onaca; Las Nubes; Cacagualito; Valparaiso); Hellm., P. Z. S., 1911, p. 1137 (Pueblo Rico, 5200 ft.; Noanamá).

Without a series of eastern Bolivian birds typical of *tuberculifer* (Lafr. & d'Orb.) I cannot satisfactorily treat our Colombian series of small, black-headed Flycatchers of the *tuberculifer-nigriceps* group. It seems unquestionable, however, that the bird of which we have forty-five specimens from western Ecuador, western Colombia, Cauca and Magdalena Valleys, Panama, Santa Marta, Buena Vista (above Villavicencio), Merida and northwestern Venezuela and Trinidad belongs to a single species.

The Ecuador specimens are topotypical of *nigriceps*, while those from Venezuela and Trinidad are referred by Hellmayr[1] to *tuberculifer*. Accepting birds from these localities, therefore, as respectively representing *nigriceps* and *tuberculifer*, and aside from slight differences in size, which doubtless would be paralleled in a series of *tuberculifer* taken from Bolivia to Venezuela, the Trinidad and Venezuela birds (8 specimens) may be distinguished from the Ecuador birds (5 specimens) by having the crown fuscous-black instead of pure black, the back grayish olive-green, instead of olive-green while the crown is less clearly defined from the back; the belly averages paler, but there is here much variation. In the size and shape of the bill, color of the wing-bars, and extent of cinnamon on the inner wing-quills, individual variation is so great that geographical variation, if it exists, is obscured.

Accepting, then, these two series as standards for comparison, it appears, as might be expected, that specimens from the Pacific Coast of Colombia are typical of *nigriceps* and a single old skin from the Panama R. R. line is evidently also *nigriceps.* It is surprising, however, to find the form of the humid Pacific Coast in the Cauca and Magdalena Valleys, but specimens from Cali, Rio Frio and below Andalucia unquestionably belong to it.

Alto Bonito, 2; Dabeiba, 3; Juntas de Tamaná, 1; San José, 3; Rio Frio, 2; Cali, 1; w. slope below Andalucia (alt. 3000 ft.) 3.

(3093*a*) **Myiarchus tuberculifer tuberculifer** (*Lafr. & d'Orb.*).

Tyrannus tuberculifer Lafr. & d'Orb., Syn. Av. I, Mag. de Zool., 1837, p. 43 (Guarayos, e. Bolivia).

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[1] Nov. Zool., XIII, 1906, pp. 26, 323.

Two specimens from Buena Vista, near the eastern base of the Eastern Andes are intermediate between *nigriceps* from Ecuador and *tuberculifer* from Venezuela and Trinidad; the back is less green than the former and not so gray as in the latter, and the crown while lacking the intense black of *nigriceps* is not as fuscous as in the birds from Venezuela and Trinidad. On geographical grounds, however, these birds should be referred to *tuberculifer* rather than to *nigriceps*.

Santa Marta birds (19 specimens) agree with those from eastern Venezuela and Trinidad.

Buena Vista, 2.

(3100) **Tyrannus tyrannus** (*Linn.*).

Lanius tyrannus Linn., Syst. Nat., I, 1758, p. 94 (Carolina).
Tyrannus pipiri Scl. & Salv., P. Z. S., 1879, p. 515 (Medellin).
Tyrannus tyrannus Allen, Bull. A. M. N. H., XIII, 1900, p. 142 (Santa Marta).

Our specimens are from the Cauca and Magdalena Valleys, and from near Quetame. On April 15, 1912, we saw loose flocks containing hundreds of Kingbirds on the Magdalena River near Puerto Wilche. They were presumably migrating.

Miraflores, 1, Apl. 20; San Agustin, 1, Apl. 17; Susumuco, 1, Mch. —.

(3101) **Tyrannus niveigularis** *Scl.*

Tyrannus niveigularis Scl., P. Z. S., 1860, p. 281 (Babahoyo, Ecuador).

A specimen from Ricaurte agrees with topotypical examples from Daule. This western Ecuador species has not before been recorded from Colombia.

Ricaurte, 1.

(3102) **Tyrannus dominicensis** (*Gmel.*).

Lanius dominicensis Gmel., Syst. Nat., I, 1788, p. 302 (Santo Domingo).
Tyrannus dominicensis Cass., Proc. Acad. N. S. Phila., 1860, pl. 143 (Carthagena).
Tyrannus griseus Allen, Bull. A. M. N. H., XIII, 1900, p. 142 (Bonda).

Found only on the San Juan and Lower Magdalena.

Noanamá, 2, Dec. 29, Jan. 1; Banco, 2, Jan. 24; Varrud, 2, Nov. 5.

(3104) **Tyrannus melancholicus satrapa** (*Cab. & Hein.*).

Laphyctes satrapa Cab. & Hein., Mus. Hein., II, 1859, p. 77 (Paraguay).
Tyrannus melancholichus Cass., Proc. Acad. N. S. Phila., 1860, p. 143 (Carthagena; Turbo; Truando); Wyatt, Ibis, 1871, p. 334 (Bucaramanga region up to

9000 ft.); Scl. & Salv., P. Z. S., 1879, p. 516 (Retiro; Medellin); Robinson, Flying Trip, p. 160 (Barranquilla to Honda; Guaduas).

Tyrannus melancholichus satrapa Hellm., P. Z. S., 1911, p. 1138 (Tadó); Allen, Bull. A. M. N. H., XIII, 1900, p. 142 (Bonda; Minca; Onaca; Cacagualito; Valparaiso).

Abundant throughout tropical Colombia. While in the main an inhabitant of the Tropical Zone this wide-ranging species apparently follows trails and clearings up the mountains and it is thus locally common in the Temperate Zone, for example on the Bogotá Savanna.

Dabeiba, 1; Bagado, 1; Quibdó, 2; Nóvita, 1; Noanamá, 1; San José, 3; Caldas, 1; Las Lomitas, 2; Ricaurte, 4; Tumaco, 2; Puerto Valdivia, 1; San Antonio, 2; Munchique, 1; Cali, 2; Guengüe, 1; La Manuelita, 2; Rio Frio, 1; Salento, 2; Sta. Elena, 2; Barro Blanco, 4; La Sierra, 1; San Agustin, 2; Andalucia (3000 ft.), 2; Chicoral, 1; Honda, 1; Calamar, 2; La Playa, 2; Turbaco, 1; Aguadita, 1; Bogotá Savanna, 2; Subia, 2; La Olanda, 3; Quetame, 1; Florencia, two specimens in juvenal plumage.

(3107) **Muscivora tyrannus** (*Linn.*).

Muscicapa tyrannus Linn., Syst. Nat., I, 1766, p. 325 (Surinam).

Milvulus tyrannus Wyatt, Ibis, 1871, p. 334 (Ocaña region up to 5000 ft.); Scl. & Salv., P. Z. S., 1879, p. 516 (Retiro; Medellin); Robinson, Flying Trip, p. 160 (Guaduas; Honda); Stone, Proc. Acad. N. S. Phila., 1899, p. 306 (Honda); Allen, Bull. A. M. N. H., XIII, 1900, p. 142 (Bonda; Valparaiso; Manaure; San Sebastian; Santa Marta; Palomina).

Generally distributed throughout the arid Tropical Zone and in open or cleared areas in the hunid parts of this zone; ranging upward to 7200 feet.

Turbaco, 1; Caldas, 1; Cali, 6; La Manuelita, 2; Barro Blanco, 4; Chicoral, 1.

Family PIPRIDÆ. Manakins.

(3116) **Pipra erythrocephala erythrocephala** (*Linn.*).

Parus erythrocephalus Linn., Syst. Nat., I, 1759, p. 191 (Surinam).

Pipra auricapilla Cass., Proc. Acad. N. S. Phila., 1860, p. 191 (Turbo); Scl. & Salv., P. Z. S., 1879, p. 516 (Remedios; Neché); Robinson, Flying Trip, 1895, p. 161 (R. Magdalena); Allen, Bull. A. M. N. H., XIII, 1900, p. 156 (Bonda; Onaca; Minca; Agua Dulce; Las Nubes; Valparaiso).

Inhabits the Tropical Zone of the Pacific Coast, Atrato, Cauca, and Magdalena Valleys. Specimens from these districts agree with the orange-headed form of the Caribbean coast region, Trinidad, and the Guianas, while those from this zone at the base of the Eastern Andes are referable to the yellow-headed form, *P. e. berlepschi.* Both races, therefore, are found in the Bogotá region and their occurrence together in 'Bogotá' collections has doubtless led to the belief that the characters separating them are individual rather than racial.

With somewhat over one hundred males before me representing the greater part of the geographic range of the species, I find no difficulty, however, in distinguishing two perfectly valid forms the distribution of which, aside from the light here thrown on birds from the Bogotá region, is correctly given by Ridgway (Bull. 50, IV, pp. 743, 748). Females of *erythrocephala* are yellower, particularly below, than those of *berlepschi.*

R. Salaqui, 1; Los Cisneros, 1; Puerto Valdivia, 6; Rio Frio, 1; west of Honda, 3.

(3116*a*) **Pipra erythrocephala berlepschi** *Ridgw.*

Pipra erythrocephala berlepschi Ridgw., Proc. Biol. Soc. Wash., XIX, 1906, p. 117 (Nauta, northeastern Peru).

Inhabits the Tropical Zone at the eastern base of the Eastern Andes. Our specimens have the crown slightly more orange than it is in twenty-two old 'Napo' skins, but agree with three specimens collected at Zamora, southeastern Ecuador, in October, 1913.

Florencia, 3; La Morelia, 2; Buena Vista, 4; Villavicencio, 1.

(3118) **Pipra mentalis minor** *Hart.*

Pipra mentalis minor Hart., Nov. Zool., 1898, p. 489 (Cachabi, n. w. Ecuador); Hellm., P. Z. S., 1911, p. 1139 (Rio Cajon; Sipi; Nóvita; Noanamá).

Restricted to the Tropical Zone of the Pacific coast. As Hellmayr (*l. c.*) has shown, west Colombian specimens agree with Ecuadorian birds in color but are nearer Panama specimens (*ignifera*) in size.

Baudo (3000 ft.), 1; Noanamá, 2; Nóvita, 1; San José, 1; Barbacoas, 4.

(3120*a*) **Pipra leucocilla minimus** nom. nov.

Pipra leucocilla minor Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 623 (Cocal, Col.).

Char. subsp.— Similar to *Pipra leucocilla anthracina* (Ridg.) but much smaller, the lower tail-coverts not always tipped with grayish. Wing, 54; tail, 22.5–25; culmen, 8–9; breadth of bill at nostril, 4–5 mm.

Known only from the type-locality where it represents the nearly related *P. l. anthracina* of Veragua and Costa Rica. Between Cocal and Veragua no form of this species appears to have been recorded.

Doctor Hellmayr kindly calls my attention to the fact that the subspecific name proposed for this race is pre-occupied by *Pipra mentalis minor* Hart., a form with which, as the preceding entry shows, I am perfectly familiar, but the name of which I had overlooked in this connection. I therefore suggest the name *Pipra leucocilla minimus* for the Cocal form.

Cocal, 3.

(3122) **Pipra leucocilla coracina** (*Scl.*).

Pipra coracina Scl., P. Z. S., 1856, p. 29 (Bogotá).

Found only at Buena Vista, above Villavicencio, and on the eastern slope of the Eastern Andes below Andalucia (4000 ft.). Three adult males, aside from being larger, are less bluish black than recently collected specimens from British Guiana. Females are much brighter green than those of *P. l. leucocilla.* Two young males collected by Fuertes, one having the testes slightly, the other much enlarged, have the crown, sides of the head and nape uniform slaty gray clearly defined from the oil-green back. This is evidently the first nuptial plumage and, as shown by specimens of *P. l. leucocilla,* it is succeeded by that of maturity.

Buena Vista, 7; Andalucia, 1.

(3124) **Pipra isadorei isadorei** *Scl.*

Pipra isadorei Scl., Rev. Zool., 1852, p. 9 (Bogotá).

Found only at Buena Vista, where two males were taken. An old 'Bogotá' skin is duller above, and browner below, while the blue rump is slightly paler.

Buena Vista, 2.

(3127) **Pipra velutina** *Berl.*

Pipra velutina Berl., Ibis, 1883, p. 492 (Veragua).

Pipra cyaneocapilla Scl. & Salv., P. Z. S., 1879, p. 517 (Medellin; Remedios; Neché).

Pipra coronata velutina Hellm., P. Z. S., 1911, p. 1140 (Nóvita; Sipi; Noanamá; Rio Cajon; San Joaquim).

A common inhabitant of the Tropical Zone of the Pacific coast, and eastward into Antioquia. Barbacoas specimens are considerably smaller than those from Chiriqui and Costa Rica (wing, 56; as compared with 62 mm.), a difference to which Hellmayr (*l. c.*) has already called attention.

Alto Bonito, 5; Bagado, 5; Andagueda, 1; Juntas de Tamaná, 1; Nóvita, 5; Noanamá, 1; San José, 4; Buenaventura, 1; Barbacoas, 6; Puerto Valdivia, 5.

(3128) **Pipra coronata** *Spix.*

Pipra coronata Spix, Av. Bras., II, 1825, p. 5, pl. vii, fig. 1("in sylvis fl. Amazonum").

Found in the Tropical Zone at the base of the Eastern Andes. Eight males differ from a large series of old "Napo" skins in being blacker and in having less violaceous wash, particularly on the rump. It is probable, however, that these differences are due to the difference in the age of the skins.

Florencia, 15; La Morelia, 12.

(3138) **Cirrhipipra filicauda** (*Spix*).

Pipra filicauda Spix, Av. Bras., II, 1825, p. 6, pl. viii, figs. 1, 2 ("ad pagum St. Pauli in sylvis fl. Solimoens").

A pair from La Morelia and an adult male from Florencia.

La Morelia, 2; Florencia, 1.

(3141) **Machæropterus striolatus** (*Bonap.*).

Pipra striolata Bonap., P. Z. S., 1837, p. 122 (w. Brazil).
Machœropterus striolatus Scl. & Salv., P. Z. S., 1879, p. 517 (Medellin; Remedios; Neché).

Doubtless distributed throughout the humid Tropical Zone. While obviously a representative of *M. regulus* of southeastern Brazil the ranges of the two birds are not known to be connected and their intergradation is problematical.

Alto Bonito, 1; Puerto Valdivia, 2; La Frijolera, 1; w. of Honda, 1; Florencia, 5; La Morelia, 1.

(3143) **Allocopterus deliciosus** (*Scl.*).

Pipra deliciosa Scl., P. Z. S., 1860, p. 90 (Nanegal, Ecuador).

Found only in the southern part of the Western Andes where it ranges as low as 1200 ft. Five males agree with three others from Nanegal (type-locality), Ecuador. This species does not appear to have been before recorded from Colombia.

Cocal, 1; Buenavista, Nariño, 9.

(3144) **Chloropipo flavicapilla** (*Scl.*).

Pipra flavicapilla Scl., Rev. Zool., 1852, p. 9 (Bogotá).
Chloropipo flavicapilla Scl. & Salv., P. Z. S., 1879, p. 516 (Medellin).

An adult male from San Antonio, above Cali, is the only specimen of this species which we have taken. It has the crest and breast brighter and the former fuller than in a 'Bogotá' specimen, but the latter may not be mature.

San Antonio, 1.

(3146) **Chloropipo holochlora holochlora** *Scl.*

Chloropipo holochlora Scl., Cat. Bds. B. M., XIV, 1888, p. 287 ('Bogotá').

This form appears to be confined to the Tropical Zone at the eastern, base of the Eastern Andes.

Florencia, 1; Villavicencio, 2.

(3147) **Chloropipo holochlora litæ** *Hellm.*

Chloropipo holochlora litæ Hellm., Nov. Zool., 1906, p. 325 (Lita, n. w. Ecuador); P. Z. S., 1911, p. 1138 (Sipi; Nóvita).

Found only in the Tropical Zone of the Pacific Coast.

Baudo, 1; San José, 2; Barbacoas, 2.

(3151) **Piprites tschudi** (*Cab.*).

Hemipipo tschudi Cab., J. f. O., 1874, p. 79 (Miñabamba, cen. Peru).

A male from La Frijolera is somewhat brighter than a female and an unsexed specimen from Zamora, Ecuador.

La Frijolera, 1.

(3156) **Masius chrysopterus** (*Lafr.*).

Pipra chrysoptera Lafr., Rev. Zool., 1843, p. 97 (Bogotá).

Inhabits the Subtropical Zone of the Eastern Andes and the eastern slope of the Central Andes, at least at the head of the Magdalena Valley.

A molting male from La Candela agrees with one in similar plumage from Fusugasugá and therefore shows no approach toward *M. corunulatus* with which this species does not appear to intergrade.

La Candela, 1 ♂, 4 ♀♀; Fusugasugá, 2 ♂♂, 2 ♀♀; Aguadita, 1 ♂, 3 ♀♀.

(3158) **Masius corunulatus** *Scl.*

Masius corunulatus Scl., P. Z. S., 1860, p. 91 (Nanegal, Ecuador); Scl. & Salv., *Ibid.*, 1879, p. 516 (Dept. Antioquia).

Masius chrysopterus bellus Hart. & Hellm., Orn. Monatsber., XI, 1903, p. 35 (Rio Lima, 4000 ft., w. Col.); P. Z. S., 1911, p. 1138 (Pueblo Rico, 5200 ft.).

We have found this species only in the Western Andes and lower Cauca slope of the Central Andes. At Buenavista it descends as low as 1200 ft.

The most careful comparison of eight males from western Colombia with two from Nanegal (type-locality of *corunulatus*) and two from Gualea, Ecuador, fails to reveal characters on which to base a Cauca region form. Both Colombian and Ecuadorian series contain birds with "tobacco-brown" and "dark red" (*cf.* Hellm., Gen. Av., Pt. IX, 1910, p. 16) crests. The yellow of the wings averages deeper in the Colombian birds, but the difference at best is slight and entirely overlapped by individual variation. Possibly our specimens from Gallera and Buenavista may not typically represent "*bellus*" of the Cauca region, though we have not found in other species any difference between specimens from Gallera and the Andes west of Cali. Furthermore, a specimen from Las Lomitas, essentially topotypical of *bellus*, can be almost exactly matched with one from Gualea. I detect no evidence of intergradation between this species and *M. chrysopterus* of the Eastern Andes.

Las Lomitas, 1 ♂, 3 ♀♀; San Antonio, 1; Cocal, 1 ♀, 1 ♂ juv.; Gallera, 3 ♂♂; Buenavista, Nariño, 4 ♂♂; La Frijolera, 1.

(3162) **Chiroxiphia pareola napensis** *Miller.*

Chiroxiphia pareola napensis Miller, Bull. A. M. N. H., XXIV, 1908, p. 338, pl. 25 (Napo, Ecuador).

A pair from La Morelia, the male agreeing with the type of *napensis*.

La Morelia, 2.

(3170) **Corapipo leucorrhoa** (*Scl.*).

Pipra leucorrhoa Scl., P. Z. S., 1863, p. 63, pl. x (Bogotá).

Three adult males, one each from El Consuelo (3300 ft.) above Honda, one from Honda, and one from San Antonio, in the Western Andes above

Cali, agree in color, size, length of primaries and wing-formula. It is to be noted that San Antonio is in the Subtropical Zone. There is, however, a possibility of the specimen from this locality having been taken in the Tropical Zone below the crest of the ridge known as San Antonio. In any event, the bird is typical, showing no approach to the long outer primaried *C. a. altera* which occurs in the Chocó Valley at the western base of the Western Andes, a fact in distribution which, in connection with the nature of the characters separating the two birds, suggests, in my opinion, their specific distinctness.

San Antonio, 1; Honda, 1; El Consuelo, 1.

(3170*a*) **Corapipo altera altera** *Hellm.*

Corapipo leucorrhoa altera Hellm., Bull. B. O. C., XVI, 1906, p. 84 (Carrillo, Costa Rica).

Two males taken by Mrs. Kerr in the Baudo Mts. (alt. 2500 and 3500 ft.), considerably extend the range of this species. They are smaller than a male from Costa Rica (wing 56, tail 27, as compared with wing, 60; tail, 31.5 mm.) but agree with it in color and in wing-formula.

Baudo Mts., 2.

(3174) **Manacus manacus abditivus** *Bangs.*

Manacus manacus abditivus Bangs, Proc. N. E. Zoöl. Club, I, 1899, p. 35 (Santa Marta, Col.); Allen, Bull. A. M. N. H., XIII, 1900, p. 155 (Bonda; Minca; Cacagualito; Donama; Masinga Vieja; Jordan).

Chiromachæris manacus Scl. & Salv., P. Z. S., 1879, p. 517 (Remedios; Neché).

Specimens from Antioquia have the long beard and wing characters of *abditivus,* of which we have a large topotypical series, but the abdominal region is somewhat grayer and the white areas show a faint but unmistakable tint of yellow indicating an approach toward *flaveolus,* with which, as below stated, I believe this form intergrades.

A specimen from Puerto Valdivia is the most western record for this species in northern Colombia. Between this point and Barbacoas in southwestern Colombia it is unknown to occur. These Manakins inhabit rather open, scrubby places where their buzzing flight quickly calls attention to them, and their absence from collections made in western Colombia is almost conclusive evidence that they are not found in this region.

It may be suggested that *Manacus vittellinus* replaces *Manacus manacus* in the region in question, but the occurrence of both forms at Puerto Valdivia is of importance in this connection. It should be added, however, that the form of *vittellinu* found at Puerto Valdivia is much paler than that of the Pacific coast.

Puerto Valdivia, 1; vicinity of Medellin, 2; Malena, 1.

(3174*a*) **Manacus manacus interior** *Chapm.*

Manacus manacus interior CHAPM., Bull. A. M. N. H., XXXIII, 1914, p. 624 (Villavicencio, Col.).

Char. subsp.— Resembling *M. m. abditivus* in color but wing and tail averaging slightly longer, the wing more pointed, the chin feathers ('beard') shorter, broader, and less stiffened; differing from *M. m. manacus* in its grayer underparts, unbarred nape and more pointed wing.

Inhabits the Tropical Zone at the eastern base of the Eastern Andes.

Villavicencio, 3.

(3174*b*) **Manacus manacus bangsi** *Chapm.*

Manacus manacus bangsi CHAPM., Bull. A. M. N. H., XXXIII, 1914, p. 625 (Barbacoas, Col.).

Char. subsp.— Resembling *M. m. gutturosus* (Desm.) in color, the throat and jugulum white clearly demarked from the deep gull-gray breast and abdomen, but wing longer and more pointed, tail shorter, outer primaries narrower less regularly curved and projecting 8 to 10 mm. beyond the tips of secondaries.

This race appears to have a very restricted range. No form of the species has been recorded from the Pacific coast of Colombia north of Barbacoas nor have we met with one in the Cauca Valley. To the south its range can extend but a short distance since at Esmeraldas, Ecuador southward, the quite different *M. m. leucochlamys* (Bull. A. M. N. H., XXXIII, 1914, p. 626) is found.

Barbacoas, 7.

(3176) **Manacus manacus flaveolus** *Cass.*

Manacus flaveolus CASS., Proc. Acad. N. S. Phila., 1851, p. 349 (Bogotá).

Manacus manacus abditivus STONE, Proc. Acad. N. S. Phila., 1899, p. 306 (Honda).

Apparently restricted to the upper Magdalena Valley where it appears to represent *M. m. abditivus* of the lower part of the valley. As remarked under that race specimens from Malena, from near Medellin, and Puerto Valdivia show, in possessing a faint tint of yellow on the anterior underparts and nape, an evident approach toward *flaveolus*. The difference between the two forms is further bridged by three specimens from the vicinity of Honda which are much less strongly tinged with yellow than are specimens from Chicoral, one of which has the chin-tuft more elongate, as in *abditivus*. Our material, therefore, indicates that in the eighty-odd miles between Malena and Honda, in which the humid Magdalena Valley merges into the arid Magdalena Valley, *abditivus* merges into *flaveolus*.

Honda, 2; west of Honda, 8; Chicoral, 6.

(3177) **Manacus vitellinus vitellinus** (*Gould*).

Pipra vitellina Gould, P. Z. S., 1843, p. 103 (Panama).
Chiromachæris vitellina Hellm., P. Z. S., 1911, p. 1141 (Noanamá; Nóvita).

Inhabits the Tropical Zone of the Pacific coast and, much to my surprise, I find that four males from the Cauca Valley agree with this form rather than with *M. v. milleri* from the lower part of the river.

I can discover no constant difference between Colombia and Panama specimens but possibly the belly averages paler in specimens from the Canal Zone region, while the orange areas are most deeply colored in a specimen from Chorrera on the southern side of the Isthmus, facts which seem to indicate an approach toward *M. aurantiacus*.

Alto Bonito, 5; Dabeiba, 6; Quibdó, 1; Juntas de Tamaná, 2; Nóvita, 2; Noanamá, 1; Buenaventura, 1; San José, 6; Cisneros, 7; Rio Frio, 2; Guengüe, 1; Cauca Seca (Batty), 3.

(3177*a*) **Manacus vitellinus milleri** *Chapm.*

Manacus vitellinus milleri Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 645 (Puerto Valdivia, Antioquia, Col.).

Chiromachæris vitellina Scl. & Salv., P. Z. S., 1879, p. 517 (Remedios).

Char. subsp.— Similar to *M. v. vitellinus* (Gould) but male with the throat, breast, sides of the head and nape chrome rather than cadmium, posterior underparts olive-yellow rather than warbler-green; female paler below, the abdomen, particularly centrally, yellower.

Occupies the Tropical Zone of the lower Cauca in Antioquia, and doubtless extends eastward to the Magdalena.

Puerto Valdivia, 12.

(3186) **Scotothorus turdinus rosenbergi** (*Hart.*).

Heteropelma rosenbergi Hart., Nov. Zool., V, 1898, p. 489 (Cachabi, n. w. Ecuador).

Two males from Chocó (probably near Quibdó) and one from an altitude of 4500 ft. on the trail to Cartago, above Novitá, extend the range of this species from northwest Ecudaor. They agree with two essentially topotypical specimens from Esmeraldas, Ecuador. As Hartert has already remarked (*l. c.*) the various members of this group are doubtless subspecifically related, and I follow with this and the succeeding form the arrangement proposed by Hellmayr (Nov. Zool., XVII, 1910, 310–312).

Chocó, 2; Nóvita Trail, 1; Barbacoas, 2.

(3187) **Scotothorus turdinus stenorhynchus** (*Scl. & Salv.*).

Heteropelma stenorhynchum Scl. & Salv., P. Z. S., 1868, p. 632 (San Esteban, Venezuela).

Heteropelma verœpacis Allen, Bull. A. M. N. H., XIII, 1900, p. 155 (Bonda; Cacagualito).

Found only at Consuelo (alt. 3300 ft.) in the Tropical Zone of the Magdalena Valley above Honda. Three specimens agree with a series from Panama (Canal Zone) and Santa Marta.

El Consuelo, 3.

(3193) **Sapayoa ænigma** *Hart.*

Sapayoa .ænigma Hart., Nov. Zool., X, 1903, p. 117 (Rio Sapayo, n. w. Ecuador); Hellm., P. Z. S., 1911, p. 1141 (Nóvita; Noanamá).

Evidently a not uncommon species in the Tropical Zone of the Pacific coast, ranging from northwestern Ecuador to eastern Panama.

Baudo (alt. 3500 ft.), 1; Noanamá, 1; Barbacoas, 4.

FAMILY COTINGIDÆ. COTINGAS, CHATTERERS.

(3200) **Tityra cayana** (*Linn.*).

Lanius cayana Linn., Syst. Nat., I, 1766, p. 137 (Cayenne).

A pair from Florencia and a female from Villavicencio. The females agree and are much less heavily streaked both above and below than Trinidad females which, however, may not be typical.

Florencia, 2; Villavicencio, 1.

(3202) **Tityra semifasciata semifasciata** (*Spix*).

Pachyrhynchus semifasciatus Spix, Av. Bras., II, 1825, p. 32, pl. xliv, fig. 2 (Pará).

Tityra semifasciata Allen, Bull. A. M. N. H., XIII, 1900, p. 154 (Minca).

A pair of birds from Buena Vista near the eastern base of the Eastern Andes appear to be typical of this form, the female being grayer than any of our females from Matto Grosso. We have, however, no topotypical specimens from the lower Amazon.

Buena Vista, 2.

(3202*a*) **Tityra semifasciata columbiana** *Ridgw.*

Tityra semifasciata columbiana Ridgw., Proc. Biol. Soc. Wash., XIX, 1906, p. 119 (La Concepcion, Santa Marta, Col.); Hellm., P. Z. S., 1911, p. 1142 (Nóvita).

Tityra personata Scl. & Salv., P. Z. S., 1879, p. 517 (Remedios; Neché).

Tityra semifasciata Allen, Bull. A. M. N. H., XIII, 1900, p. 154 (Minca; Pueblo Viejo).

An adult male from Noanamá agrees in size with specimens of *T. s. esmeraldæ* from Esmeraldas, Ecuador, but resembles Santa Marta specimens in color and in the pattern of the tail-markings, the black area on the inner vane of the outer feather being separated from the shaft by a white line connecting the white basal and apical portions of the feather. On the other hand specimens from Dabeiba and Puerto Valdivia agree in size with *C. columbiana* (wing, 124 mm.) but the tail-markings are not so near those of *columbiana* as in the Nóvita specimen, the black on the inner vane of the outer feather reaching to the shaft, though by no means so broad there as on the inner border of the vane.

Our series of eight topotypical (Santa Marta) specimens of this form differ from Chapada, Matto Grosso, specimens in having the black frontal band slightly narrower and in being smaller, while the females average darker.

Nóvita, 1; Dabeiba, 1; Puerto Valdivia, 3.

(3202*b*) **Tityra semifasciata esmeraldæ** *Chapm.*

Tityra semifasciata esmeraldæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 320 (Esmeraldas, Ecuador).

Char. subsp.— Tail in the male with a broad subterminal black band which reaches the shaft of every feather and is of essentially equal extent on each; closely agreeing therefore in tail-pattern with *T. s. costaricensis* but with the terminal white band narrower, the subterminal band broader, the body plumage whiter and size smaller; female wholly unlike the female of *costaricensis*, and closely resembling in general coloration the female of *T. s. semifasciata* but with the black subterminal band much broader, the basal gray band correspondingly reduced, and dimensions much smaller.

A female from Barbacoas agrees in color and size with specimens from Esmeraldas, Ecuador.

(3209) **Tityra buckleyi** *Salv. & Godm.*

Tityra buckleyi SALV. & GODM., Biol. Cent.-Am. Aves., II, 1890, p. 120 ("Yanayacu," [*sic*] e. Ecuador).

A pair of birds taken by Miller at Florencia evidently represent this species which does not appear to have been recorded from Colombia before.

This species is obviously a representative of *T. inquisitor.* From the lower Orinoco form of that species (*T. i. erythrogenys*) the male differs only in being slightly smaller and in having the auriculars white. The female has the back more heavily spotted than in *erythrogenys.*

Florencia, 2.

(3213) **Platypsaris homochrous homochrous** (*Scl.*).

Pachyrhamphus homochrous SCL., P. Z. S., 1859, p. 142 (Pallatanga, Ecuador); SCL. & SALV., P. Z. S., 1879, p. 517 (Remedios).

Platypsaris homochrous HELLM., P. Z. S., 1911, p. 1143 (Nóvita; Condoto).

A male from Nóvita agrees with ten specimens from western Ecuador. Comparison with these Ecuadorian specimens confirms the validity of *P. h. canescens* (Bull. A. M. N. H., XXXI, 1912, p. 155) from the Santa Marta Mts.

Nóvita, 1.

(3214) **Platypsaris minor** (*Less.*).

Querula minor LESS., Traité d'Orn., 1831, p. 363 (Cayenne).

A male and female from La Morelia and another from Florencia agree in color with specimens from the Lower Orinoco and British Guiana, but are somewhat larger. The males measure, wing, 91–93; tail 65–66 mm.

La Morelia, 2; Florencia, 1.

(3218) **Pachyrhamphus versicolor** (*Hartl.*).

Vireo versicolor HARTL., Rev. Zool., 1843, p. 289 (Colombia).

Pachyrhamphus versicolor SCL. & SALV., P. Z. S., 1879, p. 518 (Dept. Antioquia).

Not uncommon in the Subtropical Zone of all three ranges.

San Antonio, 6; Cerro Munchique, 3; Miraflores, 2; El Eden, 1; Aguadita, 1; El Roble, 2.

(3221) **Pachyrhamphus rufus** (*Bodd.*).[1]

Muscicapa rufa Bodd., Tabl. Pl. Enl., 1783, p. 27 (Cayenne).

This species is represented in our Colombian collections by a male labeled "Rio Lima, Aug. 1898, J. H. Batty."

(3223) **Pachyrhamphus cinnamomeus** *Lawr.*

Pachyrhamphus cinnamomeus Lawr., Ann. Lyc. Nat. Hist. N. Y., VII, 1861, p. 295 (Lion Hill, Panama); Scl. & Salv., P. Z. S., 1879, p. 518 (Remedios); Hellm., P. Z. S., 1911, p. 1144 (Guineo; El Tigre; San Joaquim; Nóvita; Noanamá).

A common species in the Tropical Zone from the Pacific coast eastward. Twenty-five specimens from the Pacific coast agree essentially with the type. We have also a specimen from the lower Cauca and the Magdalena Valleys, two old Museum skins labeled as from 'Bogotá' and a female collected by ourselves at Buena Vista above Villavicencio. While slightly smaller than typical (Panama) specimens (wing, 72; tail, 56; culmen, 13 mm.) this Buena Vista specimen is too large to be referred to *P. rufus* (Bodd.) (= *P. cinereus* auct.); moreover, it agrees minutely in color with Pacific coast specimens and hence shows no trace of the grayish cervix of *P. castaneus* (Jard. & Selby).

Alto Bonito, 5; Juntas de Tamaná, 1; Nóvita, 2; Noanamá, 2; Buenaventura, 1; San José, 4; Los Cisneros, 1; Barbacoas, 7; Puerto Valdivia, 5; Malena, 1; west of Honda, 1; Buena Vista, 1.

(3223*a*) **Pachyrhamphus magdalenæ** *Chapm.*

Pachyrhamphus magdalenæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 629 (Algodonal, Col.).

Char. sp.— Resembling *P. cinnamomeus* but much paler, the back browner, less rufous, sayal-brown rather than rufous-tawny; the crown-cap more clearly defined from the back, the wing-coverts much browner and with pronounced lighter margins; the underparts white, washed with warm buff; the bill smaller, the mandible browner.

Known only from the type.

(3223*b*) **Pachyrhamphus** sp.

I am unable satisfactorily to identify a female *Pachyrhamphus* taken by Richardson at Cali, December 22, 1910. It is obviously closely related to *P. cinnamomeus* and also to *P. rufus* (Bodd.) (= *P. cinereus* Auct.) but cannot be properly referred to either. Compared with specimens of *cinnamomeus* taken at the same season on the Pacific coast it is slightly smaller (wing, 70; tail, 52; culmen, 13.8 mm.) and is much paler throughout, the lores and underparts being whitish faintly tinged with buff, the underparts pale tawny rather than rich rufous tawny, while the wing-coverts are uniform tawny or rufous tawny without trace of paler margins. In this character the bird agrees with the female of *P. rufus* but it is much paler below than any female of that species in our collection and is decidedly larger, the bill especially being heavier, the tail longer, the tail-feathers wider. Furthermore, there is less difference between the color of the head and back than in *rufus*. Nor can it be considered the female of *P. magdalenæ* which is less rufous above and has the wing-coverts conspicuously margined and, in the male at least, the cap obviously deeper than the back. The discovery of the male of this species will be awaited with interest.

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[1] = *P. cinereus* auct. *cf.* Hellm., Abhandl. Akad. Wiss. München, Bd. XXII, 1906, p. 669.

(3224*a*) **Pachyrhamphus castaneus saturatus** *Chapm.*

Pachyrhamphus castaneus saturatus Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 628 (La Morelia, Col.).

Char. subsp.— Similar to *P. c. intermedius* Berl., but much darker throughout; the back deep hazel, or between amber, brown and argus, brown, the underparts ochraceous, tawny, the nape slate-gray; the crown of nearly the same shade as the back.

Known only from the type.

(3226) **Pachyrhamphus polychropterus niger** (*Spix*).

Pachyrhynchus niger Spix., Av. Bras., II, 1825, p. 33, pl. xlv, fig. 1 (Rio Ica).

Two adult males from La Morelia and Florencia respectively, have the rump, upper tail-coverts and ventral region wholly black, and are evidently typical of this form. Four males from Buena Vista and Villavicencio also have the rump and upper tail-coverts black, but the ventral region is more or less grayish, and these birds thus show an approach toward the form of *niger* which inhabits Trinidad. Of this form we have five adult males from Trinidad. Compared with twelve adult males from Santa Marta (Bonda) the Trinidad birds are black rather than gray below, while the upper tail-coverts are black slightly edged with grayish instead of pure gray. The differences are apparent at a glance and the distinctness of the two forms is beyond question. If the name *cinereiventris* Scl. can be properly applied to Santa Marta birds it is certainly not applicable to specimens from Trinidad which, although not typical of *niger* are far nearer to that form than to the form from Santa Marta. If, as Hellmayr suggests (Archiv. für Naturg., 1912, p. 90), Sclater's type did not come from Santa Marta then the bird from Santa Marta requires a new name. Ridgway (Bull. U. S. N. M., 50, IV, 831) has already clearly stated this case, but I cannot agree with him that two adult males in the American Museum collection from San Antonio and Cumanacoa, Venezuela, respectively, are nearer to *niger* than to *cinereiventris*. In the color of the underparts they are fairly intermediate, but in the grayness of the rump and upper tail-coverts they are obviously nearer *cinereiventris*. An adult male from El Pilar, Venezuela, however, is exactly like specimens from Trinidad. But whatever may be the status of the Venezuelan bird those inhabiting Santa Marta and Trinidad represent two quite unlike races.

La Morelia, 1; Florencia, 1.

(3232) **Pachyrhamphus atricapillus** *Merr.*

Pachyrhamphus atricapillus MERR., Av. Icon. et Descr., 1784, p. 26 (Surinam).

A female from La Morelia agrees essentially with a female from Cayenne.

La Morelia, 1.

(3234) **Pachyrhamphus dorsalis** *Scl.*

Pachyrhamphus dorsalis SCL., Cat. Am. Bds., 1862, p. 243, (Bogotá); HELLM., P. Z. S., 1911, p. 1143 (Pueblo Rico, 5200 ft.).

Pachyrhamphus cinereiventris SCL. & SALV., P. Z. S., 1879, p. 518 (Sta. Elena); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 154 (Bonda; Cienaga; Valparaiso; Santa Marta).

Fourteen specimens (12 males, 2 females) from the Subtropical Zone of the Eastern and Western Andes are to be referred to this form, the exact status of which appears not to have been satisfactorily determined. The gray nuchal collar supposed to be diagnostic of the species is well developed in some specimens and wholly wanting in others from the same locality, (San Antonio) and such birds differ from true *cinereiventris* only in their larger size and paler underparts. It is quite probable that the two forms intergrade.

San Antonio, 3; W. Andes above Cali, 3; Ricaurte, 5; Aguadita (above Fusugasugá), 3.

(3236) **Lathria fuscocinerea fuscocinerea** (*Lafr.*).

Querula fusco-cinerea Lafr., Rev. Zool., 1843, p. 291 (Colombia).
Lathria fuscocinerea Scl. & Salv., P. Z. S., 1879, p. 518 (Alegria).

Found chiefly in the upper portions of the Subtropical Zone of all three ranges of the Andes.

Paramillo Trail (10,000 ft.), 1; above Salento (9000 ft.), 2; Laguneta, 1; El Roble (8300 ft.), 4; Subia, 1.

(3238) **Lathria cinerea** (*Vieill.*).

Ampelis cinerea Vieill., Nouv. Dict. d'Hist. Nat., VIII, 1817, p. 162 (Cayenne).

Six specimens from and near Florencia introduce this Amazonian form into the Colombian fauna. These birds agree minutely with eight specimens from British Guiana. Both series were collected by Miller, the first in June, 1912, the second in July and August, 1913.

Florencia, 6.

(3240) **Lathria unirufa castaneotincta** *Hart.*

Lathria unirufa castaneotinctus Hart., Nov. Zool., 1902, p. 610 (Paramba, n. w. Ecuador); Hellm., P. Z. S., 1911, p. 1145 (Nóvita; Sipi; Noanamá; Cajon).
Lipaugus unirufus Cass., Proc. Acad. N. S. Phila., 1860, p. 143 (Turbo; Truando).
Lathria unirufa Scl. & Salv., P. Z. S., 1879, p. 518 (Remedios; Neché).
Lathria unirufa clara Ridgw., Proc. Biol. Soc. Wash., XIX, 1906, p. 120 (Panama).

Inhabits the Tropical Zone of the Pacific coast. Specimens from the upper Atrato agree with essentially topotypical examples from Barbacoas and Esmeraldas. I am unable to distinguish topotypical (Panama) specimens of *L. u. clara* Ridgw., from our west Colombian birds. Two specimens from Puerto Valdivia are paler than others in the series, but I believe that the difference shown is, in part at least, seasonal.

Atrato River, 1; Baudo, 3; Noanamá, 1; Nóvita, 4; Barbacoas, 2; Puerto Valdivia, 2.

(3242) **Lathria cryptolopha** *Scl. & Salv.*

Lathria cryptolopha Scl. & Salv., P. Z. S., 1877, p. 522, (Monji, Eucador).

A female of this species which appears to be new to Colombia was taken by Miller at Andalucia on the summit of the Eastern Andes (alt. 7000 ft.). It agrees with Sclater's description.

Andalucia, 1.

(3246) **Lipaugus simplex** (*Licht.*).

Muscicapa simplex LICHT., Verz. Doubl., 1823, p. 53 (Bahia).

A female from Florencia is slightly smaller than specimens from eastern Brazil; it measures wing, 91; tail, 83; culmen, 18 mm.

Florencia, 1.

(3247*a*) **Lipaugus holerythrus holerythrus** *Scl. & Salv.*

Lipaugus holerythrus SCL. & SALV., P. Z. S., 1860, p. 300 (Choctum, Vera Paz, Guatemala); WYATT, Ibis, 1871, p. 334 (e. of Lake Paturia); SCL. & SALV., P. Z. S., 1879, p. 519 (Neché).

Specimens from the lower Atrato and lower Cauca Valleys agree with specimens from Panama rather than with one of *L. h. rosenbergi.*

Alto Bonito, 3; Puerto Valdivia, 3.

(3248) **Lipaugus holerythrus rosenbergi** *Hart.*

Lipaugus holerythrus rosenbergi HART., Bull. B. O. C., XVI, 1905, p. 12 (Rio Dagua, w. Col.); HELLM., P. Z. S., 1911, p. 1145 (Nóvita; Sipi).

Represented only by a female from Los Cisneros, approximately the type-locality. Appreciably richer in color than specimens from Panama and those recorded under the preceding race.

Los Cisneros, 1.

(3250) **Attila brasiliensis parambæ** *Hart.*

Attila parambœ HART., Bull. B. O. C., XI, 1901, p. 39 (Paramba, n. w. Ecuador).
Attila fuscicauda CHAPM., Bull. A. M. N. H., XXXI, 1912, p. 155 (Gallera, Col.).

Known only from the Subtropical Zone of the Western Andes. Hellmayr writes me that he has compared specimens from the Western Andes of Colombia with the type of *parambœ* and that they are inseparable.

Gallera, 3.

(3250*a*) **Attila citreopygus citreopygus** (*Bonap.*).

Dasycephala citreopyga BONAP., Compt. Rend., XXXVIII, 1854, p. 657 (Nicaragua).

A male from Rio Salaqui, Chocó, agrees with Panama specimens, but a male from Puerto Berrio has the head and underparts decidedly gray, a difference due possibly to the individual variation which occurs in the group. This species has not before been recorded from Colombia.

Rio Salaqui, 1; Puerto Berrio, 1.

(3270*a*) **Rupicola peruviana aurea** *Chapm.*

Rupicola peruviana aurea Chapm., Bull. A. M. N. H., XXXI, 1912, p. 156 (Salento, Cen. Andes, Col.).

Rupicola peruviana Wyatt, Ibis, 1871, pp. 125, 334 (near Portrerras, 7000 ft.); Stone, Acad. N. S. Phila., 1899, p. 306 (Nevada de Tolima).

Char. subsp.— Similar to *Rupicola peruviana peruviana* Lath., but male with the anterior parts of the body, and particularly the crest, more orange in color, orange-chrome rather than flame-scarlet, the gray of the tertials more restricted not wholly concealing the subapical black of the underlying feather; general coloration of female more orange.

Inhabits the Subtropical Zone of the Central and Western Andes. It is rare or absent near frequented places, but in the rocky gorges of certain tributaries of the Magdalena near San Agustin Miller found seven nests and secured the eggs, young in various stages, and a large series of adults in the latter part of April, 1912. The specimens recorded from Buena Vista were brought us in the flesh by a native hunter who claimed to have secured them in the heavy forest on the shores of the Rio Negro. This locality was at an altitude of about 1600 feet, and the occurrence of the species there would imply its presence in the Tropical rather than the Subtropical Zone, in which alone we had heretofore found it as well as *R. sanguinolenta.* Subsequently a specimen was received from a native whom in December, 1913, we sent from Bogotá to the Meta, and labeled by him "Barrigon, Dec. 21, 1912, macho." Barrigon is in heavy gallery forest, but is some sixty miles east of Villavicencio and hence on the llanos.

Richardson also has sent us five specimens taken at an altitude of 2000 ft. at Zamora, southeastern Ecuador, and in light of this evidence it appears that on the eastern slope of the Eastern Andes this bird may at times be found in the Tropical Zone, though we should prefer to have the Barrigon record confirmed before believing that the bird is found sixty miles from the mountains.

Comparison of our fresh specimens from the Bogotá region with old 'Bogotá' skins shows that in the latter the black areas are somewhat duller and the orange not quite so deep, but the difference on the whole is very slight. The same remarks hold true on comparison of freshly collected Zamora specimens with old skins labeled "Ambato, Ecuador."

The exceptionally large series of Colombian birds now available shows that all the specimens received from that country are referable to the form described as *aurea* though none is quite as richly colored as the type and topotype from Salento in the Central Andes. To this race should also be referred the specimens collected by Richardson at Zamora in southeastern Ecuador. It is more than probable, therefore, that specimens from northern Peru also agree with these Ecuadorian birds when, if the name *peruviana* is based on the bird of this part of Peru, *aurea* would become a pure synonym of it. Examination, however, of the descriptions and particularly plate (Pl. Enl. 745) on which Latham (Index Orn. II, p. 555) based his name *peruviana,* shows that it is applicable to the bird in which the exposed surfaces of the tertials are wholly gray, as they are in *sanguinolenta,* whereas in not one specimen of the very large number of males which I have seen from Ecuador and Colombia does this condition occur, all having the gray of the tertials so restricted that the subapical black area is visible beyond the gray tip of the overlying feather. This is a definite and constant character and aside from differences in intensity of the orange areas, clearly separates the birds of Ecuador and Colombia from those of at least southern Peru to which Buffon's plate apparently makes the name *peruviana* applicable.

Peruvian specimens from Inca Mine, Rio Inambari, Machu Picchu and Rio Cosirem north of the last-named locality agree and differ from the Colombian bird as described above, but agree with Bolivian specimens from Locotal. If the Peruvian birds represent true *peruviana, Rupicola saturata* Cab. & Hein. evidently becomes a synonym of it.

Salento, 4; La Palma, 9; Andalucia, 1; near San Agustin, 15; Buena Vista, 2; Barrigon, 1.

(3272) **Rupicola peruviana sanguinolenta** *Gould.*

Rupicola sanguinolenta Gould, P. Z. S., 1859, p. 99 ("Quito"); Scl. & Salv., P. Z. S., 1879, p. 519 (Concordia; Frontino).

Evidently restricted to the Subtropical Zone of the Western Andes. It is rare in the mountains above Cali but apparently more common in less frequented regions. Our specimens agree with others from Gualea, Ecuador, which may be considered topotypical. In the Cauca region one may look across the Cauca Valley from the home of *sanguinolenta,* in the Western Andes, to that of *aurea* in the Central Andes, but the birds are more unlike here than are Bolivian specimens from West Andean specimens. In other words the form of *peruviana* nearest *sanguinolenta* is the one which, geographically, is farthest removed from it.

Nóvita Trail (6000 ft.), 1; San Antonio, 1; Munchique, (7000 ft.), 1; La Florida, 4; Gallera, 1; Cocal, 4.

(3277) **Euchlornis arcuata** (*Lafr.*).

Ampelis arcuata Lafr., Rev. Zool., 1843, p. 98 (Colombia).

Represented by a single male from Laguneta.

(3278) **Stictornis cinctus** (*Tsch.*).

Ampelis cinctus Tsch., Archiv für Naturg., 1843, I, p. 385 ("in sylvis Pangoæ, Peru).

Ampelion cinctus Scl. & Salv., P. Z. S., 1879, p. 520 (Frontino).

Our specimens of this seemingly not common species are from the Subtropical Zone of the Western and Eastern Andes. We lack topotypical specimens.

Las Lomitas, 1; San Antonio, 1; Cocal, 1; Andalucia (7000 ft.), 2.

(3279) **Euchlornis riefferi riefferi** (*Boiss.*).

Ampelis riefferi Boiss., Rev. Zool., 1840, p. 3 (Bogotá).

Pipreola riefferi Scl. & Salv., P. Z. S., 1879, p. 519 (Retiro; Medellin; Sta. Elena).

Found in the Subtropical Zone of the Eastern and north Central Andes. Specimens from the Bogotá region are topotypical. Two males from El Eden, on the east slope of the Central Andes, and three from Sta. Elena are intermediate but nearer to *riefferi* than to *occidentalis*. I cannot place a female from Salento but the form of that locality is probably *occidentalis*.

Sta. Elena, 6; El Eden, 2; Fusugasugá, 3; El Roble, 5; Subia, 6.

(3279*a*) **Euchlornis riefferi occidentalis** *Chapm.*

Euchlornis riefferi occidentalis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 630 (San Antonio, Col.).

Char. subsp.— Similar to *E. r. riefferi* but head, throat and breast blacker, the black of the head more sharply defined from the green back; closely resembling *E. r. melanolæma* in the color of the parts named but the wing-coverts and tertials less conspicuously tipped, black areas of these feathers less clearly defined and differently shaped.

Common in the Subtropical Zone of the Western Andes but apparently less numerous in the Central Andes. Females from Almaguer and Salento doubtless should be referred to this race.

San Antonio, 15; Cerro Munchique, 6; La Florida, 3; Cocal, 2; Almaguer, 1; Salento, 1.

(3287) **Euchlornis lubomirski** (*Tacz.*).

Pipreola lubomirskii Tazc., P. Z. S., 1879, p. 236 pl. xxii (Tambillo, Peru).

A male from La Candela in the Central Andes agrees with the description and plate of this species which does not appear to have been before recorded from Colombia.

La Candela, 1.

(3288) **Euchlornis jucunda** (*Scl.*).

Pipreola jucunda Scl., P. Z. S., 1860, p. 89, pl. clx (Cachi-Llacta, Ecuador).

A female taken by Richardson at Buenavista (alt. 1200 ft.) Nariño, appears to be the first specimen of this bird to be recorded from Colombia.

Buenavista, Nariño, 1.

(3294) **Cotinga nattereri** (*Boiss.*).

Ampelis nattererii Boiss., Rev. Zool., 1840, p. 2 (Bogotá).
Cotinga simoni Berl., Ornis, XIV, 1907, p. 361 (San José, Col.).
Cotinga nattererii Hellm., P. Z. S., 1912, p. 1146 (Nóvita).

Apparently a not uncommon species in the Tropical Zone of Western Colombia, and its occurrence at Puerto Valdivia and in a 'Bogotá' collection indicates that it ranges eastward to the forests of the Magdalena. Two males from Barbacoas and a female from Esmeraldas extend the range of this species and the latter adds it to the known avifauna of Ecuador.

Iguamiando, Chocó, 4; Noanamá, 4; Barbacoas, 3; Puerto Valdivia, 1.

(3300) **Carpodectes hopkei** *Berl.*

Carpodectes hopkei Berl., Orn. Monat., V, 1897, p. 174 (San José, Col.); Hellm., P. Z. S., 1911, p. 1147 (Nóvita).

Restricted to the Tropical Zone of the Pacific Coast. Our five specimens were collected by Mrs. Kerr.

Iguamiando, Chocó, 3 adult males, 2 females.

(3302) **Heliochera rubrocristata** (*d'Orb. & Lafr.*).

Ampelis rubrocristata d'Orb. & Lafr., Syn. Av., I, 1837, p. 39 (Yungas, Bolivia).

Heliochera rubrocristata Wyatt, Ibis, 1871, p. 334 (Pamplona; Vetas); Allen, Bull. A. M. N. H., XIII, 1900, p. 152 (Sierra Nevada de Santa Marta).

Heliochœra rubrocristata Scl. & Salv., P. Z. S., 1879, p. 520 (Sta. Elena).

A common species in the forests of the Temperate Zone of all three ranges. We have no topotypical (Bolivian) specimens, but an adequate series from Ecuador, Colombia, and Venezuela shows no racial difference.

Paramillo, 6; Coast range w. of Popayan (alt. 10,340 ft.), 1; Valle de las Pappas, 5; Laguneta, 6; Santa Isabel, 2; El Piñon, 2.

(3303) **Heliochera rufaxilla** (*Tsch.*).

Ampelis rufaxilla Tsch., Arch. für Naturg., I, 1844, p. 270 (Peru).
Heliochera rufaxilla Scl. & Salv., P. Z. S., 1879, p. 520 (Sta. Elena).

Our three specimens are from the Subtropical Zone of the Western and Central Andes. I have no Peruvian specimens for comparison.

San Antonio, 1; Cerro Munchique, 2; Sta. Elena, 2.

(3310) **Querula purpurata** (*Müll.*).

Muscicapa purpurata P. L. S. Müll., Syst. Nat. Suppl., 1776, p. 169 (Cayenne).
Querula cruentata Cass., Proc. Acad. N. S. Phila., 1860, p. 143 (Turbo); Scl. & Salv., P. Z. S., 1879, p. 520 (Pocune; Remedios).
Querula purpurata Hellm., P. Z. S., 1911, p. 1148 (Noanamá).

This wide-ranging species of the Tropical Zone was found in the heavy forests of the Pacific coast, Magdalena Valley and Amazonian region.

Salaqui, Chocó, 3; Alto Bonito, 1; Nóvita, 3; Buenaventura, 3; San José, 4; Barbacoas, 6; Puerto Valdivia, 4; Puerto Berrio, 1; La Morelia, 4.

(3312) **Pyroderus scutatus granadensis** *Lafr.*

Pyroderus granadensis Lafr., Rev. Zool., 1846, p. 277 (Colombia); Wyatt, Ibis, 1871, p. 334 (Canuto).

Inhabits the Subtropical Zone of the Eastern Andes and also the eastern slope of the Central Andes, at least at the head of the Magdalena.

La Palma, 1; San Agustin, 1; near Fusugasugá, 1.

(3313*a*) **Pyroderus scutatus occidentalis** *Chapm.*

Pyroderus scutatus occidentalis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 631 (San Antonio, Col.).
Pyroderus orenocensis Scl. & Salv., P. Z. S., 1879, p. 520 (Concordia; Frontino; Sta. Elena).

Not uncommon in the Subtropical Zone of the Western Andes and western slope of the Central Andes. In describing this form, I have discussed at some length the distribution of the remaining members of the group.

Las Lomitas, 1; San Antonio, 8; Rio Lima (alt. 5000 ft., Batty), 4; Cerro Munchique, 1; Gallera, 1; La Florida, 2; Miraflores, 2; Salento, 4; La Frijolera, 1.

(3315) **Cephalopterus ornatus** *Geoff.*

Cephalopterus ornatus GEOFF., Ann. Mus., XIII, 1809, p. 238, pl. 17 (Brazil).

Found only in the Tropical Zone at the base of the Eastern Andes. Our specimens from Buena Vista were brought in by native hunters from whom we could not learn the exact locality (and hence altitude) at which they were killed. One, a mature male with fully developed crest the anterior shafts of which are white, has the breast wattle (measurement from below) 150 mm. in length.

Florencia, 1; Buena Vista, 2.

(3316) **Cephalopterus penduliger** *Scl.*

Cephalopterus penduliger SCL., Ibis, 1859, p. 114, pl. iii (Pallatanga, Ecuador).

Our expeditions did not meet with this species in Colombia, but our collections contain four specimens purchased from J. H. Batty, and labeled by him "Los Tambos (W. Andes), alt. 6000 ft., Col. Aug. 1898." These specimens are all immature but their comparatively small size and white under wing-coverts indicate, as might be expected, that they represent the west Ecuador form, which does not appear to have been before recorded outside of Ecuador.

Los Tambos, 4.

FAMILY HIRUNDINIDÆ. SWALLOWS, MARTINS.

(3226) **Riparia riparia** (*Linn.*).

Hirundo riparia LINN., Syst. Nat., I, 1758, p. 192 (Sweden).

Represented by a single specimen taken at Cali, February 6, 1911.

(3327) **Iridoprocne albiventris** (*Bodd.*).

Hirundo albiventris BODD., Tabl., Pl. Enl., 1783, p. 32 (Cayenne); WYATT, Ibis, 1871, p. 323 (Lake of Paturia; Magdalena).

An abundant bird in the Magdalena Valley, and we have also twelve specimens from La Morelia. The latter have a greater amount of white in the wings than in Magdalena, Trinidad, east Venezuela and Demerara specimens, the tertials being not only margined, but broadly tipped with white. In this respect they agree, however, with specimens from Maripa, Venezuela and the Potaro River, British Guiana, and possibly the difference noted may be individual or due to age. Should it be racial, the name *æquatorialis*[1] (Lawr.) would be available for the form with white-tipped tertials, Lawrence's type (A. M. N. H. No. 40227) showing this character.

La Playa, 7; La Morelia, 12.

(3331) **Hirundo erythrogaster** *Bodd.*

Hirundo erythrogaster Bodd., Tabl. Pl. Enl., 1783, p. 45 (Cayenne).

Represented by two specimens in winter plumage, one a female taken August 20, 1912, at Quibdó by Mrs. Kerr, the other, unsexed, taken at Juntas de Tamaná, Dec. 19, 1911, by Allen and Miller. A third specimen, a female in nuptial plumage, was taken by Manuel Gonzales, a native whom we employed, at La Olanda on the Bogotá Savanna, May 13, 1914, a month after the species reaches the latitude of New York City.

Quibdó, 1; Juntas de Tamaná, 1; La Olanda, 1.

(3335) **Progne chalybea chalybea** (*Gmel.*).

Hirundo chalybea Gmel., Syst. Nat., I, 1789, p. 1026 (Cayenne).
? *Progne chalybea* Cass., Proc. Acad. N. S. Phila., 1860, p. 133 (Carthagena).
Progne leucogastra Wyatt, Ibis, 1871, p. 323 (Catamucho).
Progne chalybeia Scl. & Salv., P. Z. S., 1879, p. 495 (Remedios).
Progne chalybea chalybea Hellm., P. Z. S., 1911, p. 1093 (Nóvita).

Of general distribution in the Tropical Zone though we have no specimens from the Pacific coast region. In the amount of steel-blue on the breast and sides, a male from Florencia evidently approaches a specimen from Napo, Ecuador, described by Ridgway (Bull. U. S. N. M., 50, III, p. 50). A similarly marked specimen from British Guiana, where typical *chalybea* is found, indicates, as Ridgway (*l. c.*) suggests, that this type of coloration is individual, and suggests the common origin of *P. chalybea* and *P. dominicensis.*

Cali, 2; Malena, 3; Algodonal, Magdalena River, 1; Florencia, 2.

(3336*a*) **Phæoprogne tapera immaculata** *Chapm.*

Phæoprogne tapera immaculata Chapm., Bull. A. M. N. H., XXXI, 1912, p. 156 (Chicoral, Col.).

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[1] *Hirundo æquatorialis* Lawr., Ann. Lyc. N. H. N. Y., 1867, p. 400, "Quito" [= Napo region?].

Char. subsp.— Similar to *Phœoprogne tapera tapera* (Gmel.), but underparts without the median line of spots, guttate or broad central markings, which reach from breast to belly in that species; the pectoral band generally more pronounced.

Found by us only in the Tropical Zone of the Magdalena Valley and in the Caribbean coast region. It was not secured in the Cauca Valley, nor on the Pacific coast, but Mr. Cherrie and I secured specimens at Duran, near Guayaquil, during a brief stop there in May, 1916.

The receipt of additional material since this bird was described, places its status in doubt. At the time of description I had seen only one bird from north of the Amazon which showed the median pectoral spots characteristic of *P. t. tapera;* now, however, we have two more collected by Mrs. Kerr on the Sinu River, in northern Colombia, which are apparently typical of the Brazilian race, that is, have a median row of larger, well-defined fuscous spots from the breast to the abdomen. The occurrence of these specimens at the northern limit of the range ascribed to the form which I have described as *immaculata,* might be thought to invalidate the claims to recognition of that bird. The fact remains, however, that evidently without regard to age, or season, we have two quite unlike types of *Phœoprogne tapera,* one of which is the characteristic form in the southern part of the range of the species, the other characteristic of the northern part. Thus, every one of twenty specimens from southern Brazil has the median line of spots strongly developed; while sixteen of nineteen specimens from Venezuela, Colombia and western Ecuador, are without these spots.

I confess I cannot explain this unusual state of affairs. The character by which these forms are differentiated appears to be of specific, rather than of subspecific value. There is no intergradation between the two types such as we find in representative geographic races. The two north Colombia specimens are as typical of the spotted-breasted race as are birds from southern Brazil. Possibly they may, independently of environment, spontaneously exhibit a character which has been fixed in all the more southern individuals of the species, and which in time may be found in all the northern individuals as well. The case is as interesting as it is exceptional, and it is greatly to be hoped that material with which to explain it may soon be forthcoming. Meanwhile, it seems desirable to recognize, at least provisionally, the race for which I have proposed the name *immaculata,* and as an aid to the elucidation of the problem it presents, I add a list with data of all our specimens of both forms.

I. Specimens with the underparts spotted (*P. t. tapera*).

Argentina: Embarcacion, 1 ♀.
Brazil: Chapada, Matto Grosso, Jan. 1, ♀; Feb. 2, unsexed; Sept. 1, ♂,

1 unsexed, Oct. 1, ♀; Nov., 2 ♂♂, 1 ♀; Dec., 1 ♀; Corumba, Matto Grosso, April, 1 unsexed; Urucum, Matto Grosso, Dec., 3 ♂♂, 1 ♀; Palmiras, Matto Grosso, Dec., 2 ♂♂, 1 ♀; San Lorenzo River, Matto Grosso, Jan., 1 ♀. *Venezuela:* Suapure, April, 1 ♀.

II. Specimens without spots on the underparts (*P. t. "immaculata"*).

Brazil: "Bahia, 1 ♀"; Rio Xingú, Victoria (Snethlage), ♂, Nov.

Venezuela: Maripa, March, 2 ♀♀; May, 1 ♀; Dec., 2 ♂♂, 1 ♀; Suapure, 2 ♀♀.

Colombia: 'Bogota,' 1; Lower Magdalena, Jan., 1 ♂, 1 ♀, Chicoral, Oct. 2 ♂♂, 1 ♀.

Ecuador: Duran, May, 1 ♂, unsexed.

(3337) **Atticora fasciata** (*Gmel.*).

Hirundo fasciata Gmel., Syst. Nat. I, 1789, p. 1022 (Cayenne).

Four specimens from La Morelia add this species to the known fauna of Colombia.

La Morelia, 4.

(3338) **Orochelidon murina** (*Cass.*).

Petrochelidon murina Cass., Proc. Acad. N. S. Phila., 1853, p. 370 (Ecuador).

A common species in the Temperate Zone of the Eastern Andes; numerous on the Savanna of Bogotá. None was secured in the Central Andes but Miller and Boyle collected two on the Paramillo in the Western Andes, the most northern record for the species. Our specimens agree with others from Ecuador, but the two Paramillo birds have somewhat larger bills than the others.

Paramillo, 2; El Piñon, 8; La Herrera, 1; Puente Andalucia, 1; Suba, 1.

(3340) **Neochelidon tibialis** (*Cass.*).

Petrochelidon tibialis Cass., Proc. Acad. N. S. Phila., 1853, p. 370.
Atticora tibialis Scl. & Salv., P. Z. S., 1879, p. 495 (Remedios).

This little Swallow appears to be restricted to the Tropical Zone of the Pacific coast region and eastward into Antioquia.

Juntas de Tamaná, 1; San José, 3.

(3342) **Pygochelidon cyanoleuca** (*Vieill.*).

Hirundo cyanoleuca Vieill., Nouv. Dict. d'Hist. Nat., 1817, p. 509 (Paraguay).

Atticora cyanoleuca Wyatt, Ibis, 1871, p. 323 (Ocaña up to 8000 ft.); Scl. & Salv., P. Z. S., 1879, p. 495 (Frontino); Allen, Bull. A. M. N. H., XIII, 1900, p. 171 (La Concepcion).

An abundant species in the Subtropical Zone of the Western and Central Andes, descending to the Tropical Zone, but not taken below 2000 ft. It appears to be rare in the Eastern Andes.

I have no Paraguay specimens for comparison but our series agrees with a single bird from Chapada, Matto Grosso.

Caldas, 5; San Antonio, 4; Popayan, 1; Cerro Munchique, 1; Gallera, 2; Ricaurte, 3; Salento, 2; Sta. Elena, 2; Barro Blanco, 1; Rio Toché, 2; El Eden, 3; La Palma, 1; El Carmen, Bogotá region 1.

(3347) **Stelgidopteryx ruficollis ruficollis** (*Vieill.*).

Hirundo ruficollis Vieill., Nouv. Dict. d'Hist. Nat., XIV, 1817, p. 523 (Brazil).

A single male from La Morelia lacks the grayish rump-patch and is obviously to be referred to the Amazonian form which, while it has not before been recorded from Colombia, has been reported from eastern Ecuador by Hellmayr.[1]

La Morelia, 1.

(3348) **Stelidopteryx ruficollis æqualis** *Bangs.*

Stelgidopteryx ruficollis æqualis Bangs, Proc. N. E. Zool. Club, II, 1901, p. 58 (Santa Marta, Colombia).

Cotyle flavigastra Cass., Proc. Acad. N. S. Phila., 1860, p. 133 (Carthagena).

Stelgidopteryx uropygialis Wyatt, Ibis, 1871, p. 323 (Ocaña; Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 496 (Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 171 (Bonda; Santa Marta).

Common in the Tropical Zone of the entire Magdalena Valley and also at the eastern base of the Eastern Andes at Villavicencio, and doubtless as far south as the junction of llanos with Amazonian forest, where it is replaced by *S. r. ruficollis,* which Miller secured at La Morelia.

In the region between the Magdalena and Cauca Valleys intergrades occur, most of which are nearer *uropygialis* but some of which are very close to *æqualis.* While the differences between the two are obvious, there is enough seasonal variation to require the use of wholly comparable material in reaching valid conclusions concerning the relationships of specimens from areas of intergradation. Fortunately we are provided with typical seasonally comparable series of both forms, but the determinations made with this material produce results which, taken literally, might be most misleading. Thus we have specimens referable to *æqualis* from Dabeiba, Puerto Valdivia and Rio Frio in the Cauca Valley; while specimens referable to *uropygialis* were taken at La Frijolera, Barro Blanco, Salento, and Rio Toché. The fact that all the specimens of *æqualis* are from the Tropical Zone while all those of *uropygialis* are from the Subtropical Zone may have some significance, though I am at a loss to understand why in this area of intergradation *uropygialis* should be a subtropical species while in the region where it is most typically developed it is found only in the tropics. All our specimens of *æqualis,* on the other hand are from the Tropical Zone.

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[1] No. Zool., XIII, 1906, 13.

Possibly the fact that all our Subtropical Zone specimens of *uropygialis* or intergrades which are nearer that form, are non-breeding birds taken in October and November, may indicate that they are migrants from the Pacific coast region. The question can be decided only by further field work and comparison of breeding birds from all the areas concerned. Meanwhile I list our specimens, according to their apparent identity.

Dabeiba (int.), 1; Puerto Valdivia (int.), 1; Rio Frio, Cauca Valley, 1; Calamar, 1; Varrud, 1; Banco, 3; Puerto Berrio, 3; Malena, 1; Chicoral (int.), 1; Andalucia (w. slope 3000 ft.), 1; Villavicencio, 1.

(3349) **Stelgidopteryx ruficollis uropygialis** (*Lawr.*).

Cotyle uropygialis Lawr., Ibis, 1863, p. 181 (Panama).
Cotyle flavigastra Cass., Proc. Acad. N. S. Phila., 1860, p. 133 (R. Truando).
Stelgidopteryx ruficollis uropygialis Hellm., P. Z. S., 1911, p. 1093 (Sipi).

As might be expected, this is the form of *S. ruficollis* which occurs on the Pacific coast region of Colombia and Ecuador, from which it has already been recorded by others; but it is somewhat surprising to find one of these richly colored forms which characterize the Pacific lowland, extending its range into the Subtropical Zone of the Central as well as Western Andes. A specimen from Salento and two from Rio Toché, all taken in October, three from Barro Blanco (November), and one from La Frijolera (January) are much nearer to *uropygialis* than to *æqualis* and are therefore listed under that race. Whether they are migrants or merely intergrades from a general area of intergradation I am unable to say. (See also remarks under preceding race).

Juntas de Tamaná, 1; Nóvita, 1; San José, 6; Caldas, 3; Las Lomitas, 1; Barbacoas, 2; Buenavista, Nariño, 2; La Frijolera, 1; Barro Blanco, 3; Salento, 1; Rio Toché, 1.

FAMILY SYLVIIDÆ. GNATCATCHERS.

(3354) **Polioptila livida plumbeiceps** *Lawr.*

Polioptila plumbeiceps LAWR., Proc. Acad. N. S. Phila., 1865, p. 37 (Venezuela).
Polioptila livida plumbeiceps HELLM., Nov. Zool., XIV, 1907, p. 4 (Venezuela; Bogotá; Cauca Valley).

A Tropical Zone species which doubtless ranges throughout the greater part of Colombia. We have taken it only in the Magdalena Valley, but Hellmayr (*l. c.*) records it from the Cauca Valley. It is probable that it also occurs at the eastern base of the Andes since we have several specimens from the Middle Orinoco.

It is worthy of note that the Gnatcatcher of the Pacific coast from Esmeraldas southward is a bird of the *bilineata* group, of Panama, etc., a form as yet unknown from western Colombia.

Honda, 4; Chicoral, 4.

(3357*a*) **Polioptila livida daguæ** *Chapm.*

Polioptila livida daguœ CHAPM., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 648 (Los Cisneros, w. Col.).

Char. subsp.— Similar to *Polioptila l. plumbeiceps* (Lawr.) but much darker above, the back, etc., slate-gray rather than gull-gray (No. 7) the inner wing-quills narrowly instead of widely margined with whitish, outer pair of tail-feathers white almost to the base; no indication of a superciliary.

Known only from the type taken at Los Cisneros in the Tropical Zone of the Pacific Coast.

Los Cisneros, 1.

(3362) **Polioptila schistaceigula** *Hart.*

Polioptila schistaceigula HART., Bull. B. O. C., VII, 1898, p. xxx (Cachabi, n. w. Ecuador).

A female from San José and another from Puerto Valdivia near the Pacific coast are evidently to be referred to this species, hitherto known only from Ecuador. They have the outer tail-feathers black with a whitish tip about three mm. wide and whitish margin to the outer web of the feather apically. The second pair of feathers has a barely perceptible whitish tip and the remaining rectrices are wholly black.

San José, 1; Puerto Valdivia, 1.

FAMILY TROGLODYTIDÆ. WRENS.

(3363) **Cinnicerthia unirufa** (*Lafr.*).

Limnornis unirufus LAFR., Rev. Zool., 1840, p. 105 (Bogotá).

Very common in the Temperate Zone of the Eastern Andes. This is doubtless the representative of *C. unibrunneus* of Ecuador and the Central Colombian Andes 'Bogotá' specimens of which are probably from the Central Andes. Old Bogotá specimens of *unirufa* are materially paler than freshly collected ones.

El Piñon (alt. 9600 ft.), above Fusugasugá, 8.

(3364) **Cinnicerthia unibrunnea** (*Lafr.*).

Limnornis unibrunnea LAFR., Rev. Zool., 1853, p. 59 (Ecuador).

Found only at Laguneta and Santa Isabel in the Central Andes. Seven specimens collected at these localities agree with five recently collected birds from Gualea and Pichincha, Ecuador.

(3366) **Cinnicerthia olivascens** *Sharpe.*

Cinnicerthia olivascens SHARPE, Cat. Bds. B. M., VI, 1881, p. 184, pl. xi (Santa Elena, Antioquia).

Cinnicerthia unibrunnea (nec Lafr.) SCL. & SALV., P. Z. S., 1879, p. 492 (Retiro, Sta. Elena).

? *Presbys bogotensis*, MATSCHIE, J. f. O., 1885, p. 466 (Bogotá).

? *Cinnicerthia olivascens infasciata* CHAPM., Bull. Am. Mus. Nat. Hist., XXXI, 1912, 158 (Andes west of Popayan, alt. 10340 ft.).

Inhabits the Temperate and upper portions of the Subtropical Zones of all three ranges of the Andes. Since describing a supposed form of this species from the Andes west of Popayan, under the name *Cinnicerthia olivascens infasciata* (*l. c.*), the acquisition of additional material leads to the conclusion that there is but one race of this Wren in Colombia. Unfortunately I have but one specimen from Antioquia and it agrees with the figure of the type in having the back barred. I have now, however, five specimens from Laguneta and the region above Salento (alt. 9000 ft.) the fauna of which is essentially Antioquian, which can be matched by my original series of seven specimens from the Andes west of Popayan. While none of the Laguneta birds has the back barred as in the Antioquian bird, two of them have faint traces of this marking (as do also two of the West Andean birds) and in view of the locality whence they came it is probable that they represent true *olivascens,* the barring on the back of which is probably a variable character.

Turning now to three specimens from the Eastern Andes, including one from near Bogotá, we find that they can be matched by specimens from the two Cauca region series just mentioned. Only a faint indication of dorsal bars is evident, but as it appears that these bars may be wanting in specimens from the faunal region whence *olivascens* was described it seems probable that they form an individual rather than racial marking.

The black eye-stripe, to which Matschie (*l. c.*) refers as characterizing *olivascens,* is apparently a darkening of the loral and postocular region which has been emphasized by the artist in Sharpe's plate (*l. c.*). This marking is present in some and absent in other specimens from the same locality and is clearly individual.

Taken as a whole the Cauca series of twelve specimens presents considerable variation in color, some individuals being much more rufescent than others. Only four of the whole series of seventeen birds have white on the forehead, and in only one of these does it approach the extent shown by the bird in Sharpe's plate.

Andes, west of Popayan (alt. 10,340 ft.), 2; Cocal, (alt. 6000 ft.), 4; Cocal (alt. 4000 ft.), 1; Laguneta, 2; above Salento (9000 ft.), 3; Andalucia (7000 ft.), 2; El Roble, 1.

(3371) **Heleodytes minor bicolor** *Pelz.*

Heleodytes bicolor PELZ., Ibis, 1875, p. 330 (Bogotá).

Heleodytes griseus WYATT, Ibis, 1871, p. 321 (Santa Marta); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 180 (Santa Marta; Cacagualito; Bonda).

Found in the Tropical Zone of the Magdalena Valley from the coast at least to Honda. Differs constantly from *H. griseus* in its black crown and foreback, unbarred wings and tail. From *H. minor,* of the lower Orinoco, it may be known by its more chestnut back, etc. and black foreback.

Turbaco, 4; La Playa, 7; Calamar, 3; Carpinteria, 1; Remolino, 2; Honda, 1.

(3374) **Heleodytes albobrunneus harterti** *Berl.*

Heleodytes harterti Berl., Ornis, XIV, 1907, p. 347 (San José, R. Dagua, Col.).
Heleodytes albobrunneus harterti Hellm., P. Z. S., 1911, p. 1088 (El Tigre, Rio Tamaná).

A topotype from San José shows admirably the characters of blackish back, wings and tail on which this race is founded, and they are shown almost equally well by a specimen from Dabeiba on the east side of the Atrato Valley, and one from El Real, eastern Panama, while a molting specimen taken May 16, 1915, at Cituro on the Cupe River, eastern Panama, is essentially a duplicate of the type so far as its new plumage is concerned, but the still unshed, worn rectrices and remiges agree with those of Panama specimens of *albobrunneus*. It does not follow that *harterti* is not a tenable form since even in fresh plumage, *albobrunneus* is not so dark as *harterti*, but it does follow that the differences between the two are bridged by seasonal variation in *harterti*, which, in worn plumage, cannot be distinguished from *albobrunneus*. A November specimen from the Rio Salaqui, a tributary of the lower Atrato exactly matches a "Panama" bird which is unfortunately without date of collection, and, in this instance, the Panama specimen is in somewhat more worn plumage.

In juvenal plumage the crown is blackish or brownish gray (La Vieja, ♂, ♀ Oct.; Tapaliza, ♀, Feb. 19) and with the advance toward maturity it passes through a mottled stage (Rio Salaqui, Mch. 13, ♂; El Real, Dec. 28, ♀). In adult plumage both sexes have the entire head white. In addition to the Colombian specimens listed below we have five from eastern Panama.

Salaqui, 1; R. Atrato, 1; Dabeiba, 1; Bagado, 1; La Vieja, 3; San José, 1.

(3376) **Heleodytes turdinus hypostictus** (*Gould*).

Campylorhynchus hypostictus Gould, P. Z. S., 1855, p. 68 (R. Ucayali, Peru).

Found by us only in Amazonian Colombia, but occurring in Bogotá collections. Our six specimens have the outer webs of the wing-quills and also the outer tail-feathers with rusty marks or broken bars, a character wanting or but slightly suggested in five specimens from Peru and Bolivia. In a Bogotá skin, however, this rusty marking is barely evident in the wings and absent from the tail. If the Colombian bird proves to be separable it would stand as *Heleodytes turdinus striaticollis* Scl. (P. Z. S., 1857, p. 272, New Grenada).

La Morelia, 2; Florencia, 4.

(3378) **Heleodytes zonatus brevirostris** (*Lafr.*).

Campylorhynchus brevirostris LAFR., Rev. Zool., 1845, p. 339 (Bogotá).
Campylorhynchus zonatoides WYATT, Ibis, 1871, p. 321 (Naranjo).

Common in the Tropical Zone of the Magdalena Valley. Distinguished from *H. zonatus* chiefly by its more heavily barred flanks.

Opon, 1; Puerto Berrio, 2; Malena, 3; El Consuelo (above Honda), 2.

(3382) **Heleodytes nuchalis nuchalis** (*Cab.*).

Campylorhynchus nuchalis CAB., Arch. für Naturg., 1847, I, p. 206 (Venezuela).
Heleodytes pardus SCL., P. Z. S., 1857, p. 271 (Santa Marta; type, A. M. N. H., 39445, examined); WYATT, Ibis, 1871, p. 321 (Catamucho).
Heleodytes nuchalis ALLEN, Bull. A. M. N. H., XIII, 1900, p. 180 (Cienaga).

Occupies the semi-arid Coastal Zone and lower Magdalena Valley. I can detect no racial difference between the specimens listed below, two from Santa Marta (including the type of *pardus* Scl.) and one from Puerto Cabello, Venezuela, to which I assume the name *nuchalis* (Cab.) is applicable. The specimens from the lower Orinoco are smaller and possibly represent *brevirostris* Lawr., which, if we may judge from the measurements accompanying the original description, is a smaller bird than *nuchalis*.

Sinu River, 1; Turbaco, 2; Calamar, 2; Carpinteria, 1; Boca de Chimi, 1; Banco, 1.

(3385) **Odontorchilus**[1] **branicki** (*Tacz. & Berl.*).

Odontorhynchus branickii TACZ. & BERL., P. Z. S., 1885, p. 72, pl. vii, fig. 1 (Machay, Ecuador).

A fine adult male collected by Miller at La Palma agrees with the plate of this species the known range of which it extends into Colombia.

La Palma, 1.

(3389) **Thryophilus leucotis** (*Lafr.*).

T[hriothorus] leucotis LAFR., Rev. Zool., 1845, p. 338 ("Colombia aut Mexico").
Thryothorus [sp. ?] CASS., Proc. Acad. N. S. Phila., 1860, p. 193 (Turbo; Carthagena).
Thryothorus leucotis WYATT, Ibis, 1871, p. 321 (Catamucho).

Found by us only in the Tropical Zone of the Magdalena Valley from Puerto Berrio to Chicoral. The color of the upperparts in some of our specimens suggests that of the plate of *T. minlosi* Berl.,[1] of Bucaramanga, but the underparts of the figured specimen are more richly washed with rufous than in the average specimen of *leucotis*.

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[1] Cf. Richmond, Proc. Biol. Soc. Wash., 1915, p. 180.

Algodonal, 1; Puerto Berrio, 2; Malena, 2; Honda, 2; Chicoral, 2.

(3390*a*) **Thryophilus galbraithi galbraithi** (*Lawr.*).

Thryothorus galbraithii Lawr., Ann. Lyc. N. H. N. Y., VII, 1861, p. 320 (Lion Hill, Panama; type examined).

A specimen from the Rio Salaqui is somewhat less rufescent than any of four topotypes, but it can be matched by specimens from El Real, eastern Panama, whence we have also typical specimens.

Rio Salaqui, 1.

(3392) **Thryophilus albipectus bogotensis** *Hellm.*

Thryophilus bogotensis Hellm., Verz. Zool.-bot. Ges. Wien, LI, 1901, p. 774 (Bogotá).

Four specimens from Villavicencio apparently represent this form which was found only at the eastern base of the Eastern Andes. From four Guiana specimens of true *albipectus* they differ in being somewhat more richly colored, particularly below, but mainly through the blackish, rather than the brownish borders to the feathers of the superciliary and auricular and malar regions. Specimens from the Caura River, Venezuela, appear to be intermediate between those from Guiana and Villavicencio.

Villavicencio, 4.

(3398*a*) **Thryophilus rufalbus cumanensis** *Chapm.*

Thryophilus rufalbus cumanensis Chapm., Auk, XIV, 1897, p. 367 (Cumanacoa, Venezuela). Not *Troglodytes çumanensis* Licht., Nomencl. Av., 1854 — *nomen nudum* (*cf.* also Cabanis J. f. O., 1860, p. 408 and Ridgw., Bull. U. S. N. M., 50, III, 1904, p. 623).

Found by us only at Villavicencio at the eastern base of the Eastern Andes.

In discussing the status of four wrens from Cumanaçoa, Ven. (Auk, *l. c.*) I came to the conclusion that they were not separable from Panama specimens of *T. r. castanotus* Ridgw., and I accepted for them the name *cumanensis* Licht., the type of which was later said by Cabanis to have come from Carthagena, Col. With a now much larger series of specimens (thirty-seven instead of six) I find that the Cumanacoa bird is separable, and that Lichtenstein's name is a *nomen nudum*. The name *cumanensis*, therefore, dates from my publication of it in 'The Auk' though it must be confessed that my object was to show that the bird to which I applied it was not a valid form! I now name as type No. 73284, Am. Mus. Nat. Hist., Cumanacoa, Bermudez, Venezuela, ♂, July 5, 1896; W. H. Phelps.

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[1] J. f. O., 1884, pl. 1.

This form is distinguished by its smaller size and generally darker colors and by the more pronounced and slightly wider, blacker bars on the wing-quills.

The Villavicencio specimens agree fairly well with those from Cumanaçoa and indicate that this form ranges through Venezuela to the eastern base of the Andes.

Villavicencio, 11.

Measurements of Males.

	Wing	Tail	Culmen
Cristobal Colon, Ven.	67	48	18
Cumanacoa, "	67	49	18
Villavicencio, Col. (5).	67	49	19

(3400) **Thryophilus leucopogon** *Salvad. & Festa.*

Thryophilus leucopogon Salvad. & Festa, Boll. Mus. Tor. (No. 357), XV, 1899, p. 6 (Rio Peripa, w. Ecuador); Hellm., P. Z. S., 1911, p. 1089 (Nóvita).

Known only from the Tropical Zone of the Pacific coast. Hellmayr (*l. c.*) describes a specimen from Nóvita as like others from Ecuador. A female from Tapaliza, eastern Panama extends the recorded range of the species. It is materially grayer than our two Colombian specimens, but is in much worn plumage.

San José, 1; Buenavista, Nariño, 1.

(3402) **Thryophilus nigricapillus schotti** (*Baird*).

Thryothorus schottii Baird, Rev. Am. Bds., 1864, p. 133 (Rio Truando, Col.).

Thryothorus nigricapillus Cass., Proc. Acad. N. S. Phila., 1860, p. 193 (Rio Truando).

Thryophilus nigricapillus Scl. & Salv., P. Z. S., 1879, p. 493 (Remedios; "Sta. Elena").

Thryophilus nigricapillus schotti Hellm., P. Z. S., 1911, p. 1089 (Sipi; Condoto).

A common species of the Tropical Zone on the Pacific coast southward at least to Buenaventura and northward to eastern Panama (Tapaliza) and eastward to the Magdalena Valley. We have not found it above 2000 feet altitude. Its intergradation with *T. n. nigricapillus* is shown under the following form.

Alto Bonito, 11; Dabeiba, 3; Bagado, 3; Juntas de Tamaná, 4; Buenaventura, 2; San José, 9; Cisneros, 2.

(3402*a*) **Thryophilus nigricapillus connectens** *Chapm.*

Thryophilus nigricapillus connectens Chapm., Bull. A. M. N. H., XXXI, 1912, p. 157 (Cocal, Col.).

Char. subsp.— Agreeing with *Thryophilus nigricapillus schotti* (Baird) but throat white, unbarred, the breast less heavily barred; throat as in *T. n. nigricapillus* but breast and remainder of underparts more heavily barred; the flanks and back much richer ferruginous.

This intermediate form evidently has a limited range in southwestern Colombia where it ranges upward to at least 4000 feet on the western slope of the Western Andes, a higher altitude than any at which we have found *T. n. schotti* of northwestern Colombia. It is to be noted that the Ecuador form, *T. n. nigricapillus* also reaches an altitude of at least 4000 feet, which is the height above the sea of Nanegal, the type-locality of this race. Specimens labeled "Quito" doubtless were collected at the upper limits of the range of the species. They agree with others from Naranjo, Prov. Guayas, and from Esmeraldas, showing that this form apparently occupies the entire humid Tropical Zone of western Ecuador.

One of six Esmeraldas specimens approaches *connectens* in having the breast barred while of six Barbacoas specimens three have the upperparts paler than in *connectens* and in this respect are nearer *nigricapillus*. As might be expected, therefore, this is evidently the area of intergradation between these two forms while somewhere between Cocal and Buenaventura *connectens* merges with *schotti*. The region from Buenaventura to Esmeraldas is evidently, therefore, the area of intergradation of *schotti* with *nigricapillus*, and this intergrading form in the region of its typical development differs sufficiently from the forms it connects to deserve a name of its own. Certainly it could not satisfactorily be referred to one or the other.

Cocal, 7; Barbacoas, 6.

(3403) **Pheugopedius spadix** *Bangs.*

Pheugopedius spadix Bangs, Proc. Biol. Soc. Wash., XXIII, 1910, p. 74 (Naranjito, Rio Dagua, 3900 ft.).

Apparently a rare species in the lower part of the Subtropical Zone of the Pacific coast, whence we have but one specimen, but evidently more common in this zone in eastern Panama, whence we have seven specimens from Tacarcuna. In juvenal plumage the crown is umber, the throat and sides of the head below the eye blackish gray, the breast but slightly tinged with rusty.

Gallera, 1.

(3404) **Pheugopedius fasciato-ventris fasciato-ventris** (*Lafr.*).

T[hriothorus] fasciato-ventris Lafr., Rev. Zool., 1845, p. 337 (Bogotá).
Thryothorus fasciativentris Scl. & Salv., P. Z. S., 1879, p. 493 (Remedios; Neché).

This species appears to be restricted to the lower Cauca and Magdalena Valleys. Two native skins are from Anolaima on the western slope of the Eastern Andes. Specimens from the Magdalena Valley show much variation in the intensity of the color of the upperparts, barring of the underparts and amount of white on the auriculars. In only one, however, a female from near Honda, do the bars below reach the white breast, a band of black, unbarred, bordering the breast posteriorly in the others.

Puerto Valdivia, 1; Malena, 2; Algodonal, 1; Honda, 1; "Anolaima," 2.

(3405) **Pheugopedius mystacalis mystacalis** (*Scl.*).

Thryothorus mystacalis Scl., P. Z. S., 1860, p. 64 (Pallatanga, Ecuador); Scl. & Salv., P. Z. S., 1879, p. 493 (Sta. Elena).

Pheugopedius mystacalis saltuensis Bangs, Proc. Biol. Soc. Wash., XXIII, 1910, p. 74 (San Luis, Bitaco Valley, Colombia).

A common species in the Subtropical Zone of the Western and Central Andes, and occurring also in the Eastern Andes. Six specimens from San Antonio and Las Lomitas in the Western Andes, are essentially topotypical and agree with the type and topotype of *P. m. saltuensis*, loaned me by Mr. Bangs.

Compared with two Ecuadorian specimens in the Philadelphia Academy of Sciences, which agree with Sclater's description, and are from Bucay (alt. 975 ft.), and the junction of the Chanchan and Chiguancay Rivers (alt. 2500 ft.), both near Pallatanga, the type locality of *mystacalis*, the Colombian birds have slightly longer tails and the brownish gray of the crown appears to extend somewhat further backward, a difference, however, which may in part be due to the make of the skins. Some specimens from the Eastern Andes agree exactly in color and in the extent of the nape area with the Ecuador birds, while others are like those from the Western Andes. If therefore we recognize *saltuensis* we must also include *mystacalis* as a Colombian bird, and under conditions of distribution which imply that, to some extent at least, the characters in question are individual rather than geographic. In any event they do not seem to me to be sufficiently diagnostic to warrant the recognition of two forms, and I therefore accept the name *mystacalis* for the specimens in hand.

It should be added that comparison of essentially topotypical specimens of "*saltuensis*" and *mystacalis* does not reveal the characters attributed to *saltuensis* by its describer (*l. c.*), whose description leads me to infer that he compared his Colombian birds not with true *mystacalis* but with an evidently unnamed Ecuadorian form of which Richardson secured a single specimen at Esmeraldas, while the National Museum has loaned us a bird (No. 90449) of apparently the same race collected by Buckley at "Jima." This locality is on the Amazonian slope of the Andes southeast of Cuenca and if the specimen is correctly labeled the form it represents has an inexplicable distribution.

These birds differ from the Academy of Science specimens, and hence I take it from true *mystacalis,* in having the crown browner, and the underparts more tawny-olive. True *mystacalis* has the breast gray, the throat white, with little if any tawny-olive tinge, while the Esmeraldas and Jima birds have the entire underparts from bill to vent, more or less suffused with this color which, on the flanks and abdomen, is particularly strong. In short, these birds differ from true *mystacalis* much as *saltuensis* was stated to differ from it. In view of the uncertainty attached to the locality of the Buckley specimen, it seems to me to be at present inadvisable to name this Ecuadorian race.

Magdalena Valley (La Candela; Andalucia) specimens have the crown somewhat darker, the abdomen more rufous than the average bird from the Cauca region, and thus approach *amaurogaster.*

Las Lomitas, 3; San Antonio, 3; Popayan, 1; Miraflores, 4; Salento, 1; La Candela, 1; near San Agustin, 1 (juv.); below Andalucia (w. slope, 3000 ft.), 1.

(3405*a*) **Pheugopedius mystacalis amaurogaster** *Chapm.*

Pheugopedius mystacalis amaurogaster Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 179 (Buena Vista, Eastern Andes, Col.).

Char. subsp.— Similar to *P. m. mystacalis* but darker above, the auriculars more solidly black, the submalar stripe broader, the chin and upper throat white but the lower throat and breast washed with ochraceous-tawny, the flanks and abdomen strong ochraceous-tawny, the tail longer.

Eight specimens of this strongly marked race were collected at Buena Vista where it occurs, doubtless, as a representative of the Subtropical rather than the Tropical Zone, since we did not find it below this point.

Buena Vista, 8.

(3424) **Pheugopedius sclateri** (*Tacz.*).

Thryothorus sclateri Tacz., P. Z. S., 1879, p. 222 (Guajango, Peru).

This is apparently an uncommon species in Colombia. We have taken one specimen at Miraflores and a second from Enconosa, near Bogotá, was purchased. Lacking topotypical material for comparison the identification of these birds may be considered as provisional.

Miraflores, 1; Enconosa, 1.

(3427) **Pheugopedius hypospodius** (*Salv. & Godm.*).

Thryothorus hypospodius Salv. & Godm., Biol. Cen.-Am., Aves, I, 1880, p. 92 (Colombia, "skin of Bogotá make").

Found only on the eastern slope of the Eastern Andes, where it ranged from Villavicencio upward to the western border of the humid Tropical Zone, between Buena Vista and Quetame. Although evidently the representative of *P. rutilus,* none of our twelve adult specimens approaches adults of that species. In juvenal plumage, however, the two are practically indistinguishable.

Villavicencio, 8; Buena Vista, 5; Susumuco, 1.

(3434) **Cistothorus æquatorialis** *Lawr.*

Cistothorus æquatorialis Lawr., Ann. Lyc. Nat. Hist. N. Y., X, 1874, p. 3 (Pichincha, Ecuador).

Common on the paramo of Santa Isabel, and in the Valle de las Pappas, in the Central Andes. A single specimen was taken at an altitude of 10,000 feet, at the junction of the Temperate Zone with the paramo above Chipaque, east of Bogotá, from which region this species does not appear to have been before recorded.

Compared with a May specimen from Pichincha, near Quito, and July specimens from Chimborazo, fourteen September Santa Isabel specimens average somewhat less rufescent above and have the dorsal stripes paler and the crown darker. A specimen labeled "Gualea, 13000 ft., June 1, 1913," however, very closely agrees with the Santa Isabel series.

The Chipaque specimen, a female taken February 22, has the back streaked with the color of the rump (aside from the pale shaft of the feather), the ochraceous-tawny of the underparts more extensive than in any of the other specimens, covering the throat, breast and, indeed, all but the center of the abdomen. Possibly it represents a new race. It shows no approach toward *C. meridæ* but in its unbarred rump and flanks resembles *æquatorialis*.

Valle de las Pappas, 2; Paramo of Santa Isabel, 15. Chipaque, 1.

(3434*a*) **Cistothorus apolinari** *Chapm.*

Cistothorus apolinari Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 635 (Savanna at Bogotá).

Char. sp.— Similar to *Cistothorus æquatorialis* (Lawr.) but very much larger, feet particularly larger and heavier, color throughout paler, the dorsal streaks and bars in tail and wings broader; the outer pair of rectrices unbarred; outer margin of three outer primaries unbarred, wing quills much broader.

The Bogotá Savanna with an altitude of about 8600 ft., is in the Temperate Zone, and the bird here described is therefore evidently a zonal representative of the *æquatorialis* group, and appears to be isolated on the Savanna, This fact, in connection with its strongly marked characters and the occurrence of *æquatorialis* in the zone above and distant but a few miles, indicates, in my mind, the segregation and specific distinctness of the Savanna bird.

Suba Marshes, Bogotá Savanna, 5.

(3436) **Troglodytes musculus striatulus** (*Lafr.*).

T[hriothorus] striatulus Lafr., Rev. Zool., 1845, p. 338 (Bogotá; I suggest Honda).

Troglodytes tessellatus Scl. & Salv., P. Z. S., 1879, p. 493 (Medellin; Concordia).

Troglodytes striatulus Stone, Proc. Acad. N. S., 1899, p. 308 (Honda).

Troglodytes musculus striatulus Oberholser, (part), Proc. U. S. N. M., XXVII, 1904, p. 205.

The House Wren is the only passerine bird which we found to range continuously from the Magdalena Valley over the Eastern Andes to its eastern base. In this faunally diversified area it appears in three forms, one of which occupies the Tropical and Subtropical Zones of the western slope of the range, one the Temperate Zone on both slopes, and a third is found in the Tropical and Subtropical Zones of the eastern slope of the range.

For the first, or Magdalena Valley form, I accept the name *striatulus* of Lafresnaye, the second or Temperate Zone form, comparison with the type shows to be *Troglodytes columbæ* Stone, while the form from the eastern base of the range appears to be unnamed and is described beyond as *Troglodytes musculus neglectus*.

Dr. Glover M. Allen writes me that the type of Lafresnaye's *Thriothorus striatulus* was not included in the Lafresnaye collection obtained by the Boston Society of Natural History. It is doubtful, however, even if it exists, that it would be of much value in the present connection. Lafresnaye's description of the underparts of his bird as "subtus pallidior, læviter ochraceo tinctus" might apply to any of the three forms in question, though it more strongly suggests the bird inhabiting the Temperate Zone. To this form, however, Stone's name of *columbæ* is unmistakably applicable. Under the circumstances, therefore, it seems advisable to fix Lafresnaye's name on the bird occupying the Tropical and Subtropical Zones of the Magdalena Valley slope of the Eastern Andes. This, too, is the form occurring throughout the greater part of Andean Colombia and this course leaves the name *striatulus* with much the same meaning as heretofore. I consequently suggest Honda as the definite type-locality for the bird described by Lafresnaye.

As thus restricted, *striatulus* is a bird with grayish olive-brown back and whitish or centrally whitish underparts the sides and flanks being more or less washed with white, the under tail-coverts usually with well defined bars. From *columbæ,* of the Temperate Zone, it may be readily known by its white or whitish underparts.

Our collections unfortunately contain only one specimen from the upper-part of the Subtropical Zone of the western slope and it is typical *columbæ.* Beyond, therefore, a native skin labelled "Anolaima Feb. 4, 1913," I have seen no intermediate between *striatulus* and *columbæ.* A second native specimen labelled 'Anolaima, Feb. 5, 1913,' is typical *striatulus,* indicating that Anolaima is near the zone of intergradation. Probably the first-named specimen was taken above the town, the second below. However this may be, the case illustrates the necessity for more accurate labelling than even a well-intentioned native collector can supply. On the eastern slope a specimen from Quetame (alt. 4800 ft.), where certain Temperate Zone forms reach an exceptionally low altitude, in its paler underparts approaches the form from the eastern base of the Andes, for which I have proposed the name *Troglodytes musculus neglectus.*

Specimens from the head of the Magdalena Valley, the Central Andes, Cauca Valley and Western Andes are referable to *striatulus,* as above defined, but seven specimens from Tumaco and Barbacoas in southwestern Colombia which in their shorter tail, more rufescent rump, and ventral region, show an approach to *albicans* (of which I have a representative series), so closely duplicate in color and size the birds from Buena Vista at the eastern base of the Andes, that if we name facts rather than 'forms' of our own creation, the name applied to one should be applied to the other. With this comment these specimens are listed under *striatulus* as intergrades between it and *albicans.*

It should be noted that aside from these specimens from Tumaco and Barbacoas we have but one specimen of this species from that part of the Pacific Coast region of Colombia lying between Tumaco and Alto Bonito. It is worthy of comment that while in the Eastern Andes House Wrens cross the range through the Temperate Zone, in the Central and Western ranges they are not found above the subtropics. It is also surprising that in the first-named range three forms of *T. musculus* occur while, if we except the Tumaco region, only one is found throughout the whole region west of the Magdalena River.

Alto Bonito, 1; Dabeiba, 4; Bagado, 1; Barbacoas, 2;[1] Tumaco, 4;[1] Puerto Valdivia, 1; La Frijolera, 1; Caldas, 4; Las Lomitas, 3; San Antonio, 5; Cali, 5; La Manuelita, 1; Rio Frio, 1; Miraflores, 4; Salento, 1; Sta. Elena, 1; Rio Toché, 3; La Sierra, 1; Andalucia (w. slope, 3000 ft.), 1; Chicoral, 2; Honda, 2; Anolaima, 2.[2]

(3436*a*) **Troglodytes musculus columbæ** (*Stone*).

Troglodytes columbæ Stone, Proc. Acad. N. S. Phila., 1899, p. 308 (Vicinity Bogotá).
? *Troglodytes tessellatus* Wyatt, Ibis, 1871, p. 321 (Pamplona Road, 9000 ft.).
Troglodytes musculus striatulus Oberh. (part), Proc. U. S. Nat. Mus., 1904, p. 205 (Bogotá).

This strongly marked race occupies the Temperate Zone of both slopes of the Eastern Andes descending to the upper margin of the Subtropical Zone. The upperparts are appreciably darker than in *striatulus* while the underparts from bill to vent are uniform vinaceous-buff to wood-brown, with no white areas. On the western slope a native-collected specimen labeled "Anolaima, Feb. 4, 1913" is intermediate toward *striatulus* while on the eastern slope a specimen from Quetame approaches *T. m. neglectus*. The type of *columbæ* loaned me by Mr. Stone is typical of the race for which it stands.

El Roble, 1; El Piñon, 2; La Holanda, 3; Tocaimito, above Bogotá, 2; Paramo de Beltran, 1; Fōmeque, 1; Chipaque, 6; Choachi, 2; Quetame, 1.

390

(3436*b*) **Troglodytes musculus neglectus** *subsp. nov.*

Char. Subsp.— Similar to *T. m. striatulus* but rump, upper tail-coverts, flanks and ventral region more rufescent; the tail shorter.

Type.— No. 122488, Am. Mus. Nat. Hist., ♂ ad., Buena Vista (above Villavicencio), alt. 4500 ft., Eastern Andes, Colombia, March 8, 1913, F. M. Chapman.

Remarks.— This form, which is based on ten specimens, all from Buena Vista, is in color an intermediate between *striatulus* and *clarus*, of both of which we have large series. Since it is connected with the former through *columbæ* we may perhaps preferably regard *neglectus* as the eastern representative of *striatulus* rather than the western representative of *clarus.* The comparatively open character of the country between the western base of the Andes, at Villavicencio, and the middle Orinoco, whence we have specimens of *clarus,* admits of the geographical connection of these two races. The proposed new form agrees with *clarus* in size but is much grayer above and consequently nearer *striatulus* in color.

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[1] Intergrades toward *T. m. albicans*.

[2] One intergrades toward *T. m. columbæ*.

It is significant to observe that immature specimens, having the breast-feathers margined with fuscous, of all three races from the Bogotá region, clearly show the characters by which adults may be distinguished.

Measurements of Males.

		Wing	Tail	Culmen
T. m. striatulus,	Honda, Col.	53	42	15
“ “ “	“ “	55	43.5	15
“ “ “	Chicoral, Col.	53.5	41.5	15.5
“ “ “	“ “	56	44.5	16
“ “ “	Miraflores, “	56	41	15.5
“ “ “	Cali, “	54	41	15
“ “ “	La Manuelita, Col.	58	42	15
“ “ “	Caldas, “	53	42	15
T. m. columbæ,	El Piñon, “	53	41	14
“ “ “	above Bogotá “	56	44	14
“ “ “	“ “	53	42	14
“ “ “	Chipaque, “	53	42	14
“ “ “	“ “	53	41.5	14
T. m. neglectus,	Buena Vista, “	54	34.5	14
“ “ “	“ “ “	54	37	14
“ “ “	“ “ “	54	39.5	15
“ “ “	“ “ “	48	35	13
“ “ “	“ “ “	52	35	15

(3450*a*) **Troglodytes solstitialis pallidipectus** *Chapm.*

Troglodytes solstitialis pallidipectus Chapm., Bull. A. M. N. H., XXXI, 1912, p. 157 (Cerro Munchique, Col.).

Troglodytes solstitialis (nec. Scl.) Scl. & Salv., P. Z. S., 1879, p. 493 (Sta. Elena; "Neché").

Char. subsp.— Similar in size to *Troglodytes solstitialis solstitialis* Scl., more closely agreeing in color with *T. s. macrourus* Berl. & Stolz., much less rufescent throughout than *T. s. solstitialis* the breast being but slightly, instead of strongly washed with buff; wings, tail, and bill shorter than in *T. s. macrourus,* the upperparts less cinnamomeus.

Common in the Temperate Zone, less so in upper part of the Subtropical Zone of all three ranges. A specimen of true *solstitialis* Scl. collected by

Rhoads at Chimbo, Ecuador, near Riobamba, and hence essentially topotypical, has the flanks barred and thus agrees with Sclater's description (P. Z. S., 1858, p. 550). None of my twenty-five Colombian specimens is thus marked, and only one, a female from Valle de las Pappas, has the breast as heavily washed.

Munchique, 2; Laguneta, 6; Santa Isabel, 4; El Eden, 1; Rio Toché, 1; Almaguer, 4; Valle de las Pappas, 2; La Palma, 1; El Roble, 2; El Piñon, 2.

(3455) **Henicorhina leucosticta** (*Cab.*).

Cyphorhinus leucostictus Cab., Arch. für Naturg., XII, 1847, p. 206 (Guiana).

I am unable to find in our collections the Panama R. R. specimen from the Lawrence collection which Baird (Rev. Am. Bds., p. 117) referred to this species, but our more recent collections show that it at least reaches eastern Panama, where Anthony, Ball and Richardson secured nine specimens at Tacarcuna and Tapaliza. From the eastern side of the Atrato Miller and Boyle also took a small series of seven specimens, and our explorations thus materially extend the definitely known range of this species.

Four specimens from La Morelia and four from Florencia agree closely with thirteen from the Essequibo River, British Guiana, which may be considered as typically representing this species, but have, as a rule, no black on the malar region, whereas in Guiana specimens the black not infrequently encroaches on the side of the throat. In specimens from northwest Colombia and eastern Panama the malar region is still more frequently streaked and the inner wing-quills are more distinctly barred than in Guiana or southeast Colombia birds; but these differences are too inconstant to be of racial value.

All the adults in our large series have the crown and nape black with occasionally a trace of the color of the back. A specimen in juvenal plumage from La Morelia has the entire crown the color of the back but in a juvenal specimen from Tapaliza it is black lightly tinged with brownish.

While we have yet to find *leucosticta* and *prostheleuca* at the same place, the indications are that these birds do not intergrade.

Alto Bonito, 6; Dabeiba, 1; La Morelia, 4; Florencia, 4.

(3455*a*) **Henicorhina prostheleuca eucharis** *Bangs.*

Henicorhina leucosticta eucharis Bangs, Proc. Biol. Soc. Wash., XXIII, 1910, p. 74 (Pavas, w. Col.).

Apparently confined to the lower part of the Subtropical Zone and upper border of the Tropical Zone of the Pacific slope of the Western Andes. It was not found at San Antonio (alt. 6600 ft.), where *Henicorhina leucophrys guttata* was common, but was evidently not uncommon at Las Lomitas, since Richardson secured five specimens in a few days' collecting, and during the same period took but one example of *guttata*. Bangs's type was taken at Las Pavas, very near Las Lomitas, and at about the same altitude, while his second specimen is labeled "near Jiminez, w. Colombia, alt. 2400 ft."

With both these specimens and our own series before me, I am in a position to throw some light on the relationships of this form. As Hellmayr has already pointed out [1] it is not a representative of the Guianan *leucosticta* but of the Mexican *prostheleuca,* though its comparatively white malar region might easily lead to the belief that it was nearer the former.

In general tone of coloration *eucharis* is indistinguishable from *prostheleuca;* but the former has the malar and auricular regions less heavily marked with black, the superciliaries more pronounced, the tertials less distinctly barred, the greater and less wing-coverts without the white terminal spots, which are present in most specimens (13 out of our 15 adults) of *prostheleuca,* and it averages larger in size. These differences are slight and some specimens of *prostheleuca* lacking the white spots on the wing-coverts, might with difficulty be distinguished from specimens of *eucharis*. The close resemblance of the two forms, however, is evidently not indicative of correspondingly close relationships but is apparently to be attributed to parallelism in development, since between them occurs a third race which differs more from either than they do from each other.

Henicorhina prostheleuca prostheleuca (type-locality Cordova, Mexico) ranges from southern Mexico to Nicaragua. Four specimens from Mexico, two from Guatemala and eleven from Nicaragua agree, but the white spots on the wing-coverts are larger in the Mexican birds. In Costa Rica, and southward at least to Panama, *prostheleuca* is replaced by the well-marked *H. p. pittieri,* of which I have eighteen specimens from Costa Rica (El General and Boruca) and two from Panama, all but one loaned me by Mr. Bangs. In this form the bright chestnut back and but slightly browner (never blackish?) crown are more nearly as in *inornata* of the lowlands of western Colombia than they are like those of *prostheleuca* or *eucharis.* Some Costa Rica specimens, in fact, are exactly like examples of *inornata* in the coloration of the upperparts, but the latter bird has more black in the malar region, grayer sides and a larger bill, which, below, is basally flesh-color. Panama specimens show no further approach toward *inornata* but it is not improbable that intergrades between that form and *pittieri* will be found in the Atrato region.

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[1] P. Z. S., 1911, p. 1090.

The close relationships of *pittieri* and *inornata* are particularly emphasized by the fact that in both, the crown is apparently always bright brown, but little lighter in tone than the back, and with little if any black showing, while in all the other forms of the *prostheleuca* group the amount of brown on the crown is variable and, more or less frequently, black prevails.

Just how intergradation, if it occurs at all, is accomplished with the mountain-inhabiting *eucharis* is not clear, but it evidently does not occur through *inornata* which in its typical form has been found at a locality but 2000 feet below points at which *eucharis* has been taken. The case is still further complicated by the existence in the Cauca and Magdalena Valleys of a bird which unfortunately cannot be referred to any of the described forms, and which I therefore describe below under the name *Henicorhina prostheleuca albilateralis*.

Las Lomitas, 5.

(3455*b*) **Henicorhina prostheleuca albilateralis** subsp. nov.

Char. subsp.— Similar to *H. p. eucharis* (Bangs) but less richly colored, the general color of the back cinnamon-brown rather than auburn, the brown of the flanks paler and less extensive, the sides with practically no gray, the auriculars with less black.

Type.— No. 122520, Am. Mus. Nat. Hist., ♂ ad., El Consuelo (alt. 3300 ft.), western slope of Eastern Andes, above Honda, February 6, 1913; L. A. Fuertes.

Of this race we have a second specimen from El Consuelo, which is even paler than the type, three from Peque on the western slope of the Western Andes in Antioquia, and three from Rio Frio in the Cauca Valley which are slightly deeper in tone than the type, but which resemble it in the comparative paleness and restriction of the brown in the flanks and which therefore both in physical characters and faunal affinities are to be referred to the Magdalena Valley race. In its unstreaked malar region and comparatively white auriculars, this race is nearest specimens of *leucosticta* from the eastern base of the Eastern Andes, but in the much paler coloration of its back and flanks it is farther from that race than is any other form of the *prostheleuca* group.

Peque, 3; Rio Frio, 3; El Consuelo (above Honda), 2.

(3456) **Henicorhina inornata** *Hellm.*

Henicorhina inornata Hellm., J. f. O., 1903, p. 528 (Lita, n. w. Ecuador); P. Z. S., 1911, p. 1090 (Sipi).

Found only in the Tropical Zone of the Pacific Coast. Our ten specimens all exhibit the well-marked characters of thick bill, basally pale lower mandible, heavily marked malars, dark gray sides, rich rufous flanks, brown crown, bright rufous back, etc., by which this species is distinguished. In the succeeding zone, at an altitude of 5000 feet, and directly above localities at which we have found *inornata,* it is apparently represented locally by *Henicorhina prostheleuca eucharis,* but we have yet to discover intermediates between the two. In fact, as stated under *H. p. eucharis,* the relationships of this race appear to be with *H. p. pittieri* of Costa Rica to Panama, rather than with the geographically nearer *eucharis.*

Nóvita, 3; San José, 2; Barbacoas, 3; Buenavista, Nariño, 2.

(3457) **Henicorhina leucophrys guttata** (*Hartl.*).

Troglodytes guttatus Hartl., Syst. Verz. d. Ges. Mus. Brem., 1844, p. 28 (New Grenada).

Henicorhina leucophrys Scl. & Salv., P. Z. S., 1879, p. 493 (Frontino).

Henicorhina leucophrys berlepschi Ridgw., Proc. Biol. Soc. Wash., XVI, 1903, p. 168 (Chimbo, Ecuador).

A common bird in fallen tree-tops, or dense undergrowth, in the luxuriant forests of the Subtropical Zone of all three Andean ranges.

At Chipaque (alt. 8500 ft.) it occurred in the wooded ravines which, faunally, are finger-like extensions of the Subtropical Zone, penetrating the Temperate Zone. At Buena Vista (alt. 4500 ft.), above Villavicencio, the capture of a single specimen indicated the proximity of this locality to the Subtropical Zone. This Buena Vista specimen, it should be remarked, is more cinnamomeus and less rufescent than any other bird in our Colombian series.

A series of seventy-three specimens, showing both juvenal and adult plumages, and representing every month in the year, but August, affords satisfactory material for the study of the color variations of this species. In the general tone of the back there is surprisingly little variation in the color of this part which resembles that of Peruvian specimens of *leucophrys.* In the underparts there is some variation in the intensity of color of the breast and throat and the latter is, in some specimens, lightly streaked with blackish; all this, however, appears to be purely individual. There is also some variation in the extent and intensity of the rufous on the flanks and in the barring of the tail, and this is evidently, in part, geographical. Bogotá region birds have, on the average, the flanks less extensively rufous and the tail more distinctly barred; these differences, however, are too slight and inconstant to warrant recognition by name.

The greatest variation occurs in the color of the crown which in birds from the same locality varies from warm mummy-brown or Prout's-brown to nearly black. No specimen, however, has the crown wholly black and the prevailing color may be described as black, broadly tipped with Prout's-brown or mummy-brown through which the black shows to a greater or lesser extent.

This variation in the color of the crown is in part due to wearing off of the brown tips of the feathers, but is in the main evidently individual. It is shown in specimens of the same place, date, and sex, and also by specimens in juvenal plumage, some of which have the crown-feathers brown almost to their bases, while in others the brown appears as a narrow tip.

With but two Peruvian specimens before me, I am not in a position to speak conclusively of the characters which distinguish *leucophrys* from *guttata*. Both these Peruvian birds (from Inca Mine), however, have the crown black with but a trace of brown and in this respect they are matched by about five of my sixty-two specimens of *guttata;* both have the inner wing-feathers less distinctly barred than in *guttata,* while the bars in the tail are almost obsolete, and in this respect they differ from topotypical *guttata,* while more nearly resembling Cauca region birds.

In size they are somewhat smaller than the Bogotá birds, the tail being noticeably shorter (see comparative measurements beyond). I can detect no constant differences between the Peruvian and Colombian birds in the width or extent of the postocular stripe or markings in the throat.

Henicorhina leucophrys berlepschi Ridgw., of which I have the type and three other Ecuador specimens (one each from Pedregal, Minde, and Naranjo), while in a measure intermediate between *leucophrys* and *guttata,* appears, on the whole, to be nearer the latter. The type has the tail in color and in length more as in *leucophrys,* but the head is as brown as in the brownest-headed *guttata;* in short, it may be exactly matched by specimens from the Cauca region. The specimen from Minde (below Quito, alt. 5000 ft.), on the other hand, agrees exactly in color and in size with specimens from the Bogotá region. While, therefore, as in similar cases, there may be some question as to which of the forms the Ecuador bird should be referred, there can be none, I think, that it is not deserving of separation from both of the forms between which it is intermediate.

Hartlaub's "*Troglodytes guttatus*" from New Grenada which, in 1844, doubtless implied Bogotá, is described as "pectore et epigastrio cinereis" showing clearly that he had in hand a Wren of the *leucophrys,* rather than *prostheleuca* type, a matter of importance since we have discovered that a form of *prostheleuca* also occurs in the Bogotá region.

I have to thank Mr. Witmer Stone for a copy of Hartlaub's description since the work in which it was published is not contained in our library.

La Frijolera, 2; Nóvita Trail (7200 ft.), 1; Las Lomitas,[1] 1; San Antonio, 11; Cerro Munchique, 8; Miraflores, 6; Salento, 5; Sta. Elena, 4; Rio Toché, 5; El Eden, 3; La Palma, 3; La Candela, 5; Andalucia, 1; Subia, 4; Fusugasugá, 5; Aguadita, 4; El Roble, 3; Chipaque, 1; Buena Vista, 1.

(3458*a*) **Henicorhina leucophrys brunneiceps** *Chapm.*

Henicorhina leucophrys brunneiceps Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 181 (Gallera, 5700 ft., Col.).

Char. subsp.— Similar to *H. l. guttata* of the Bogotá region, but bill longer and heavier, back and wings much brighter, more ferruginous, the crown always browner; markings on outer margins of primaries less distinct, bars on inner wing-feathers and on rectrices wanting or obsolete; the tail more rufescent; breast and throat averaging grayer, the latter more streaked with blackish.

The occurrence of two forms of *Henicorhina leucophrys* on the western slope of the Western Andes is surprising but is apparently proven by our large series of specimens. *H. l. guttata* occupies the middle and upper part, *H. l. brunneiceps* the lower part of the Subtropical Zone.

Nóvita Trail (4000 ft.), 1; Gallera (5700 ft.), 2; Cocal (6000 ft.), 2; Ricaurte (4500 ft.), 1.

(3464) **Leucolepis salvini** (*Sharpe*).

Cyphorhinus salvini Sharpe, Cat. Bds. B. M., 1881, p. 292, pl. XVIII, fig. 1.

Three specimens from Florencia agree with one from Zamora in southeastern Ecuador.

Florencia, 3.

(3466) **Leucolepis phæocephalus phæocephalus** (*Scl.*).

Cyphorhinus phœocephalus Scl., P. Z. S., 1860, p. 291 (Esmeraldas, Ecuador); Scl. & Salv., P. Z. S., 1879, p. 492 (Remedios).

Cyphorhinus brunnescens Sharpe, Cat. Bds. B. M., VI, 1881, p. 293 ("Cauca Valley" = Remedios, *cf.* Hellm., P. Z. S., 1911, p. 1088).

Leucolepis phœocephalus phœocephalus Hellm., P. Z. S., 1911, p. 1088 (Juntas de Tamaná).

Apparently restricted to the Tropical Zone of the Pacific coast and Antioquia. Antioquia specimens essentially agree with a topotypical series from Esmeraldas.

Alto Bonito, 4; Baudo, 3; Barbacoas, 1; Puerto Valdivia, 1.

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[1] Las Lomitas is the only locality at which we have found both the gray-breasted (*leucophrys*) and white-breasted (*prostheleuca*) species of *Henicorhina*.

(3468) **Leucolepis dichrous** (*Scl. & Salv.*).

Cyphorhinus dichrous Scl. & Salv., P. Z. S., 1879, p. 492, pl. xli (Remedios).

Common in the Subtropical Zone of the Western Andes, and a single specimen was taken in the Central Andes. The type, said to be from Remedios, was probably taken above Salmon's headquarters at that place, the altitude of which is given by Sclater as 2360 feet.

La Frijolera, 1; San Antonio, 7; Cocal, 2; El Eden, 1.

(3472) **Microcerculus marginatus marginatus** (*Scl.*).

Heterocnemis marginata Scl., P. Z. S., 1855, p. 145 (Bogotá).

I have no material for comparison with our three specimens which, however, were taken well within the range of this race (*cf.* Hellm. Nov. Zool., 1906, p. 354).

Florencia, 2; La Morelia, 1.

(3473) **Microcerculus marginatus occidentalis** *Hellm.*

Microcerculus marginatus occidentalis Hellm., Nov. Zool., XIII, 1906, p. 354 (Lita, N. W. Ecuador).

Found by us only in the Tropical Zone of the Pacific coast. Our Colombian specimens agree with one from western Ecuador, and the series as a whole is darker than three specimens of *M. m. marginatus* from Amazonian Colombia.

Nóvita, 2; San José, 1; Barbacoas, 6.

(3476*a*) **Microcerculus squamulatus antioquensis** *Chapm.*

Microcerculus squamulatus antioquensis Chapm., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 647 (Dabeiba, R. Sucio, w. Colombia).

Char. subsp.— Most closely resembling *M. squamulatus corassus* (Bangs), but averaging larger with a longer bill; underparts more strongly and definitely barred; upperparts, flanks, ventral region and under tail-coverts darker, more rufescent cinnamon-brown instead of Saccardo's-umber.

Differing from *M. squamulatus tæniatus* (Salv.) in the color of the upperparts, flanks and ventral region as it does from *corassus,* and in having the feathers of the breast and upper abdomen basally black and more narrowly white subterminally. Differing from *M. squamulatus squamulatus* Scl. & Salv. in having the breast and upper abdomen regularly and sharply barred with black and white instead of being whitish, narrowly and weakly barred with blackish or whitish, more or less suffused with grayish or brownish and irregularly marked or mottled with broken bars, shaft-streaks or hastate crescents of black.

Our three specimens are from the Atrato Valley but this form doubtless extends eastward through Antioquia and southward along the Pacific coast.

Dabeiba, 2; Alto Bonito, 1.

FAMILY CINCLIDÆ. DIPPERS.

(3478) **Cinclus leuconotus** *Scl.*

Cinclus leuconotus SCL., P. Z. S., 1857, p. 274 (New Grenada); WYATT, Ibis, 1871. p. 320 (Vetas; Matisuga); SCL. & SALV., P. Z. S., 1879, p. 492 (Retiro; Frontino).

Not uncommon on the streams of the Subtropical Zone in the Central and Eastern Andes, and taken once at the base of the Western Andes. Our birds are darker than old Ecuador skins which, however, have doubtless faded.

Juntas de Tamaná, 1; Salento, 3; Rio Toché, 3; San Agustin, 2; Fusugasugá, 1; Quetame, 1 (observed).

FAMILY MIMIDÆ. MOCKINGBIRDS AND THRASHERS.

(3492) **Mimus gilvus tolimensis** *Ridgw.*

Mimus gilvus tolimensis RIDGW., Smith. Coll. Quart. II, 1904, p. 113 (Plains of Tolima).

Mimus melanopterus WYATT, Ibis, 1871, p. 321 (Ocaña).

Mimus gilvus SCL. & SALV., P. Z. S., 1879, p. 492 (Medellin); STONE, Acad. N. S. Phila., 1899, p. 312 (Plains of Tolima).

Locally distributed in the more arid parts of the Tropical Zone, and under favorable environmental conditions ranging upward to the Temperate Zone. Specimens from Caldas are much worn but agree in size and apparently in color with those from the upper Magdalena which are presumably typical of *tolimensis.* A specimen from Dabeiba (see measurements) agrees with this race rather than with the smaller *columbianus,* but another from Alto Bonito distant only ten miles and but 500 feet lower, is nearer *columbianus*.

Dabeiba, 1; Caldas, 4; Salento, 1; Barro Blanco, 1; Honda, 1; Chicoral, 1; La Herrera, 1; La Holanda, 4; Andalucia (w. slope, 3000 ft.), 1; near San Agustin, 1.

Measurements.

Locality		Sex	Wing	Tail	Tarsus	Culmen
La Playa,	Col.	♂	114.5	121	34.5	21
Dabeiba,	"	♂	121.5	125	34	20.2
Caldas,	"	♂	125.5	129	36	21.5
"	"	♂	122.5	129	35	22
"	"	♂	121	—	36	22
Salento,	"	♂	119	128	35	21.5
Chicoral,	"	♂	119	134	37	22.5
Andalucia,	"	♂	122.5	130	35	22.5
Alto Bonito,	"	♀	111	119.5	36	20
Quibdó,	"	♀	115	118	35	19
Barro Blanco,	"	♀	116.5	128	32.5	20.5
Honda,	"	♀	121.5	129	35	22
San Agustin	"	♀	120.5	125.5	35.5	24

(3492*a*) **Mimus gilvus columbianus** *Cab.*

M[imus] columbianus CAB., Mus. Hein., I, 1851, p. 82 (Colombia).

Mimus melanopterus WYATT, Ibis, 1871, p. 320 (Santa Marta).

Mimus gilvus columbianus ALLEN, Bull. A. M. N. H., XIII, 1900, p. 180 (Santa Marta; San Sebastian; El Mamon; Bonda; Cienaga).

This is merely a small form of *M. g. tolimensis* which doubtless occurs typically throughout the arid coastal zone, and intergrades with *tolimensis* as this zone merges into the more humid central Magdalena region. (See remarks under that race).

La Playa, 1; Alto Bonito, 1; Quibdó, 1.

(3498) **Donacobius atricapillus albovittatus** *Lafr. & d'Orb.*

Donacobius albovittatus LAFR. & D'ORB., Mag. Zool., VII, 1837, p. 19 (Chiquitos, Bolivia; *cf.* HELLM., Nov. Zool., XXI, 1914, p. 158).

Turdus atricapillus LINN., Syst. Nat., I, 1766, p. 295 ("*Cap bon spei*"— BERL. & HART., substitute eastern Brazil).

Donacobius atricapillus WYATT, Ibis, 1871, p. 321 (Lake Paturia); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 180 (Cienaga).

Donacobius brachypterus MADR., Orn. Monatsb., 1913, p. 22 (Aracatuca).

Found in the Tropical Zone of the Atrato and Magdalena Valleys, northward to eastern Panama, and at the eastern base of the Andes.

Our series of some fifty specimens of this species from Matto Grosso, Bahia, southeastern Brazil, Dutch Guiana, the lower Orinoco, Santa Marta and the other Colombian localities listed below, and eastern Panama, presents much variation. As with many other species inhabiting more or less open or scrubby places the plumage shows the fading effect of wear and exposure to light. Using, however, only comparable specimens and the series at hand appears to represent two forms, one of which is found in eastern South America from southeastern Brazil to the delta of the Orinoco; while the other ranges from southwestern Brazil to western South America east of the Andes (except in Colombia) to eastern Panama, whence we have ten specimens from El Real which considerably extend the known range of the species.

For the more eastern form the name *atricapillus* (Linn.) is evidently available, for the more western I accept *albovittatus* (Lafr. & d'Orb.) which Hellmayr (*l. c.*) has definitely shown to be based on an immature specimen of this species. *Mimus brasiliensis* Wied (type examined) is a synonym of *atricapillus* (Linn.).

The western form is characterized by its less rufescent coloration. Thus the back is raw-umber rather than rich Brussel's-brown, the rump clay-color to ochraceous-buff rather than ochraceous-tawny, while the underparts average paler. The color of the rump is the most constant character and taken in combination with the other two, generally seems diagnostic. In addition to the specimens listed below from Colombia, the following localities are represented by specimens which appear to be referable to this form: *Brazil:* Corumbá, 2; Cuyabá, 2; Rio Taquary, 1; Calama, R. Madeira, 1. *Panama;* El Real, 10.

An immature female from Honda has a well-developed white line reaching from over the eye to the nape. In a younger bird from Cienaga, Santa Marta, this line extends to a point half way between the eye and the base of the bill. Two specimens from La Morelia, one adult, one immature, have a few white feathers on the postauricular region.

Atrato River, 2; Cienaga, Santa Marta, 3; Algodonal, Magdalena River, 1; Puerto Berrio, 4; Malena, 2; Honda, 1; Villavicencio, 5; La Morelia, 5.

(3499) **Rhodinocichla rosea rosea** (*Less.*).

Furnarius rosarius Less., Ill. Zool., 1834, pl. 5 ("Brésil" = Colombia, *cf.* Lafr. Rev. Zool., 1845, p. 10).

San Antonio (south of Bogotá), 3.

Family TURDIDAE. Thrushes, Solitaires, etc.

(3505*a*) **Myiadestes ralloides venezuelensis** *Scl.*

Myiadestes venezuelensis Scl., Ann. Nat. Hist., XVII, 1856, p. 468 (Caraccas, Venezuela).

Myiadestes ralloides Scl. & Salv., P. Z. S., 1879, p. 492 (Retiro; Concordia; Medellin; Sta. Elena); Hellm., *Ibid.*, 1911, p. 1097 (Siató, 5200 ft.).

Common in the Subtropical Zone of all three ranges. Specimens from Merida, Venezuela and the Bogotá region differ from four Inca Mine, Peru specimens in the much richer coloration of the upperparts, particularly of the rump, which is bright hazel in the northern birds and cinnamon-brown in southern birds. In view of the comparative constancy in color in this wide-ranging bird the Inca Mine specimens may be considered typically to represent *ralloides* (type-locality, Yungas, Bolivia) while the Merida examples may equally well stand for *venezuelensis* (type locality, Caraccas).

Cauca specimens agree with those from the Eastern Andes in the color of the back, but have less olive on the crown which, in some examples, is nearly clear plumbeous quite to the nape, whereas East Andean specimens have the whole crown olive-brown.

San Antonio, 7; Miraflores, 2; Sta. Elena, 9; El Eden, 1; La Candela, 1; Fusugasugá, 3.

(3508) ? **Planesticus serranus** (*Tsch.*).

Turdus serranus Tsch., Arch. für Naturg., 1844, I, p. 280 (Peru).

Largely on the basis of size I refer to this species an adult female sent by Brother Apolinar from Chingassa near Bogotá. With only two females from Peru and two from Merida, Venezuela, I cannot discover the color differences separating *serranus* from *atrosericeus*, but the former seems to be larger, the wing measuring 120 and 126 mm., while in the two Venezuela birds it is 114 and 117 mm. respectively. In the Chingassa specimen it is 126 mm. A juvenal male from Subia and another from Andalucia should doubtless be referred to the same species as the Chingassa bird.

Chingassa, 1; Subia, 1; Andalucia, 1.

(3509*a*) **Planesticus fuscobrunneus** *Chapm.*

Planesticus fuscobrunneus Chapm., Bull. A. M. N. H., XXXI, 1912, p. 158 (Cerro Munchique, Col.).

Char. sp.— Related to *Planesticus atrosericeus* (Lafr.) and *P. serrana* (Tschudi), agreeing in size with the latter, slightly larger than the former; male similar in color to males of *atrosericeus* and *serrana*, female much darker; dark olive rather than olive-brown or Saccardo's-brown.

This representative of *P. serrana* is known from the Subtropical Zone of the Western and Central Andes.

San Antonio, 3; Cerro Munchique, 5; La Florida, 2; Sta. Elena, 2.

(3511) **Planesticus leucops** (*Tacz.*).

Turdus leucops Tacz., P. Z. S., 1877, p. 331 (Ropobamba, Peru).

Two males agree with a series from Zamora, southeastern Ecuador, and are distinguished from *P. fuscobrunneus*, with which they associate, in being somewhat smaller, more glossy, bluer black, and in having the outer primary much smaller. A female resembles one from Zamora, but is somewhat less rufescent.

San Antonio, 1; "Rio Lima" (Batty), 1; La Candela, 1.

(3512*a*) **Planesticus caucæ** *Chapm.*

Planesticus caucæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 182 (La Sierra, 6300 ft., Col.).

Char. sp.— Similar to *Planesticus olivater* (Lafr.), but plumage grayer, less suffused with brownish; male with black of the nape even more sharply defined from the gray of the back; breast grayish its upper part lightly streaked with black, sides of the throat black, the center of the throat and chin streaked with black; female with the crown distinctly darker than the back; the underparts much less brown than in *olivater*, the throat with but a trace of black shaft-streaks.

This apparently distinct species is based on four specimens all of which were taken at La Sierra, a locality in the Central Andes, south of Popayan, in heavy forest growth. No form of *P. olivater*, which it doubtless represents, is known from nearer than the Santa Marta mountains.

La Sierra, 4.

(3519) **Planesticus phæopygus** (*Cab.*).

Turdus phæopygus Cab., Schomb. Reis., Guiana, III, 1848, p. 666 (British Guiana).

Specimens from southeastern Colombia are somewhat more rufescent than others from British Guiana but my material from neither region is satisfactory.

La Morelia, 3 im.; Florencia, 1 im.

(3523) **Planesticus tristis daguæ** (*Berl.*).

Turdus daguæ Berl., Orn. Monatsb., V, 1897, p. 176 (San José, Col.).
Turdus tristis daguæ Hellm., P. Z. S., 1911, p. 1086 (San Joaquim; Sipi; Nóvita).

Evidently restricted to the Tropical Zone of the Pacific coast, where it apparently represents *P. t. cnephosa* of Chiriqui and northward, though there are no records of this species between western Colombia and western Panama.

Juntas de Tamaná, 1; Nóvita, 1; San José, 3.

(3528) **Planesticus gymnopthalmus** (*Cab.*).

Turdus gymnopthalmus Cab., Schomb. Reis. Guian., III, 1848, p. 665 (British Guiana).

Common at Villavicencio but apparently not ascending the mountains, since it was not found at Buena Vista. Two specimens agree with Lower Orinoco and Trinidad examples.

Villavicencio, 2.

(3531) **Planesticus ignobilis ignobilis** (*Scl.*).

Turdus ignobilis Scl., P. Z. S., 1857, p. 273 ('Bogotá'; I suggest Fusugasugá); Scl. & Salv., P. Z. S., 1879, p. 491 (Retiro; Cauca; Sta. Elena).
Merula ignobilis Stone, Proc. Acad. N. S. Phila., 1899, p. 312 (R. Totare, Plains of Tolima and Ibagüe).

Two forms of this Thrush occur in the Bogotá region, one in the Tropical Zone of the western slope, and one in the Tropical Zone of the eastern slope of the Eastern Andes. The former is the larger (5 males average, wing 118.4 mm.; tail, 96.6 mm.; 5 females, wing, 114 mm.; tail, 92.2 mm.) and should, therefore, receive the name *ignobilis* the type of which measures wing, 115 mm.; tail, 99 mm.; while the eastern slope form never reaches this size (5 males average, wing, 108 mm.; tail, 83.6 mm.; 5 females, wing, 104 mm.; tail, 79.4 mm.). There are also differences in color, the larger and more western bird having the throat with little or no pure white, the breast and rest of the underparts more heavily washed and browner.

True *ignobilis* is thus restricted to the Tropical Zone of the Magdalena

Valley which it ascends to its head. Westward, in Antioquia, it ranges in wholly typical form, to La Frijolera on the western slope of the Central Andes, thus showing that *goodfellowi* is almost restricted to the Cauca Valley and adjoining slopes.

La Frijolera, 3; Barro Blanco, 1; Rio Toché, 1; Honda, 3; El Consuelo, 2; Fusugasugá, 4; w. slope below Andalucia (alt. 3000 ft.), 2; near San Agustin, 5; La Palma, 1.

(3532) **Planesticus ignobilis goodfellowi** (*Hart. & Hellm.*).

Turdus ignobilis goodfellowi HART. & HELLM., Nov. Zool., VIII, 1901, p. 492 (Castilla, Cauca Valley).

Common in the Cauca Valley and ascending the arid slopes of both Central and Western Andes to the lower border of the Subtropical Zone. It has also reached the arid upper Dagua Valley on the western slope of the western range at Caldas, but does not extend to the lower Cauca region.

Caldas, 3; San Antonio, 5; Cali, 2; Guengüe, 1; La Manuelita, 1; Rio Frio, 3; Miraflores, 4.

(3533) **Planesticus ignobilis debilis** (*Hellm.*).

Turdus ignobilis debilis HELLM., J. f. O., 1902, p. 56 (Rio Madeira, Brazil).

Common in the Tropical Zone of the Eastern Andes from Quetame to Villavicencio. Thirteen specimens collected in February and March are grayer than four specimens collected by Miller at La Morelia in July. The former, however, are in somewhat worn, the July specimens in fresh, presumably postnuptial plumage and the differences between the two series are therefore in part, perhaps wholly, seasonal. A specimen from Yungas, Bolivia, which probably typically represents *debilis* (type-locality "Rio Madeira") is seasonally comparable with the Quetame-Villavicencio series, and is materially browner than any of the more northern birds and thus exhibits much the same kind of difference shown by the La Morelia series.

Hellmayr, however (Nov. Zool., XIII, 1906, p. 5), refers 'Bogotá' skins to *debilis*, rightly assuming that they came from the region east of Bogotá.

It was extremely interesting to us to observe that the song of this species so closely resembled the song of the American Robin (*Planesticus migratorius*) that by voice alone we should have all have mistaken it for that familiar species.

Quetame, 4; Buena Vista, 3; Villavicencio, 6; La Morelia, 4.

(3537) **Planesticus obsoletus colombianus** (*Hart. & Hellm.*).

Turdus colombianus Hart. & Hellm., Nov. Zool., VIII, 1901, p. 492 ("Cali," Colombia).

A female from San Antonio can be so nearly matched by specimens from eastern Panama that there appears to be no room to doubt the intergradation of *colombianus* with *obsoletus*.

San Antonio, 1.

(3538*a*) **Planesticus albiventer ephippialis** (*Scl.*).

Turdus ephippialis Scl., P. Z. S., 1862, p. 109 (Nov. Granada Int.).

Merula albiventris fusa Bangs, Proc. Biol. Soc. Wash., XIII, 1899, p. 107 (Chirua — type locality; La Concepcion; San Miguel; San Francisco); Allen, Bull. A. M. N. H., XIII, 1900, p. 182 (Bonda).

Four specimens from the upper Magdalena are extreme examples of, but not separable from, the Santa Marta form of which we have six specimens. This is to be distinguished from true *albiventer* of Bahia chiefly by the much paler color of the underparts, which in *albiventer* are strongly washed with brownish, particularly on the breast. This form evidently extends eastward along the Venezuelan coast but specimens from the middle Orinoco are apparently *albiventer*.

Honda, 3; Chicoral, 1.

(3544) **Semimerula gigas gigas** (*Fraser*).

Turdus gigas Fraser, P. Z. S., 1840, p. 59 (Bogotá); Wyatt, Ibis, 1871, p. 320 (8000–9000 ft.; below Paramo of Pamplona); Scl. & Salv., P. Z. S., 1879, p. 491 (Retiro; Sta. Elena).

Merula gigas Stone, Proc. Acad. N. S. Phila., 1899, p. 312 (Bogotá).

A very common bird in the Temperate Zone of the Eastern Andes descending into the Subtropical Zone, where this zone is arid, to as low as 5000 ft. In ascending the trail from Honda to Facatativá this species was first encountered at an elevation of about 6000 feet. It was common on the Bogotá Savanna, and along the trail toward Villavicencio was numerous at Chipaque, and occurred in decreased numbers as far down the trail as Quetame. Specimens from throughout this area agree one with the other and are topotypical of *gigas*. This form has the under wing-coverts tinged with ochraceous and is paler, particularly below, than specimens from the Central and Western Andes and Pichincha, Ecuador, to which the name *gigantodes* is evidently applicable, and thus marks an approach toward *pallidiventris* of the Venezuelan Andes, of which, however, I have no specimens.

A specimen from Andalucia (alt. 7000 ft.) in the Eastern Andes near the head of the Magdalena Valley, more nearly approaches the southern and western form.

The change in color of old Bogotá skins which have not been mounted or exposed to light is particularly marked in this species, and is well shown by comparison of our series of recently collected skins with Bogotá skins collected at least thirty or forty years ago. Fresh birds have the back chætura-drab, the underparts mouse-gray, while in old skins these parts are respectively sepia and drab, of Ridgway's 'Color Standards.'

Bogotá, 3; El Roble, 1; Chipaque, 3; Quetame, 4.

(3544*a*) **Semimerula gigas gigantodes** (*Cab.*).

Turdus gigantodes Cab., J. f. O., 1873, p. 315 (Maraynioc, Peru).
Turdus gigas Scl. & Salv., P. Z. S., 1879, p. 491 (Retiro, Sta. Elena).

Very common in the Temperate Zone of the Western Andes and Central Andes, on the western slope of the first-named range descending at one point to as low as 4000 feet, possibly because of the comparatively low temperature prevailing on this humid slope.

Our series of fifty specimens average slightly darker but agrees otherwise with four specimens from northern Peru (Chachapoyas and Molinopampa, and ten miles west of Balsas) collected by Osgood in 1912, and loaned me by Mr. C. B. Cory, which may doubtless be considered as typical of *gigantodes;* and also with five specimens collected for us by Richardson on Pichincha, Ecuador, in May and July, 1913.

These birds are materially darker than Bogotá specimens; the underparts are essentially concolor, whereas in *gigas* the abdomen is paler than the breast, the under wing-coverts are noticeably darker and rarely show even a trace of the ochraceous wash which is apparently always present in *gigas.*

Old 'Quito' and 'Ambato' specimens, like old 'Bogotá' specimens, are markedly paler and browner than freshly collected ones.

Paramillo, 11; Andes w. of Popayan (10,340 ft.), 1; Cerro Munchique, 6; Cocal (4000 ft.), 2; Almaguer, 1; Valle de las Pappas, 1; Laguneta, 9; Santa Isabel, 4; Sta. Elena, 1; Barro Blanco, 1; Rio Toché, 6; El Eden, 2.

(3551) **Hylocichla aliciæ aliciæ** (*Baird*).

Turdus aliciæ Baird, Rep. Expl. & Surv. R. R. Pac. IX, 1858, p. 217 (West Northfield, Ill.).
Hylocichla aliciæ Allen, Bull. A. M. N. H., XIII, 1900, p. 183 (Las Nubes; Onaca; Valparaiso; Santa Marta).

Puerto Valdivia, 1, Dec. 18.

(3553) **Hylocichla ustulata swainsoni** (*Tsch.*).

Turdus swainsonii Tsch., Fauna Peru, 1846, p. 188 (New Jersey); Wyatt, Ibis, 1871, p. 320 (Herradura).

Hylocichla ustulata swainsoni Allen, Bull. A. M. N. H., XIII, 1900, p. 182 (Bonda).

Hylocichla ustulata swainsonii Hellm., P. Z. S., 1911, p. 1087 (Nóvita).

Common in the forests of both Tropical and Subtropical Zones throughout most of the region explored. On March 5 they appeared in numbers at Buena Vista presumably started on their northward migration.

Nóvita Trail (4000 ft.), 1, Dec. 13; Las Lomitas, 1, Mch. 1; San Antonio, 5, Jan. 8–26; Rio Frio, 2, Nov. 23, 29; La Sierra, 1, Mch. 2; Miraflores, 1, April 26; Salento, 1, Nov. 9; Sta. Elena, 1, Nov. 19; Barro Blanco, 2, Nov. 26, 29; Rio Toché, 1, Oct. 26; El Eden, 1, Oct. 19; Chicoral, 1, Oct. 11; near Honda, 3, Jan. 20–April 1; Choachi, 3, Nov. 9; Buena Vista (above Villavicencio) 3, Mch. 5.

(3554) **Catharus birchalli** *Seeb.*

Catharus birchalli Seeb., Cat. Bds. B. M., 1881, V, p. 289 (Bogotá).

Near San Agustin, 2; Andalucia (3000 ft.), 1.

(3560) **Catharus phæopleurus** *Scl. & Salv.*

Catharus phæopleurus Scl. & Salv., P. Z. S., 1875, p. 541 (Dept. Antioquia); *Ibid.*, 1879, p. 491 (Medellin).

Apparently of rather local occurrence in the Subtropical Zone of the Western and Central Andes. Two specimens from Miraflores have the under tail-coverts warm ochraceous-buff, in a third there is barely a tint of this color. There is also considerable variation in the color of wings and tail which in some specimens are decidedly rufescent.

Peque, 3; near Popayan, 2; La Sierra, 2; Miraflores, 3.

(3561) **Catharus dryas** (*Gould*).

Malacocichla dryas Gould, P. Z. S., 1854, p. 285, pl. lxxv. (Guatemala).

This is a not uncommon but shy inhabitant of the heavy forests of the Subtropical Zone and upper border of the Tropical Zone of the Central and Eastern Andes. Its song, tender and thrush-like in quality, frequently betrays its presence when the eye cannot detect the singer. While there is considerable variation in the color of the underparts in our series of fifteen specimens most of them agree essentially with Plate II, in the Biologia Centrali Americana, and both above and below are therefore much more richly colored than four old Guatemalan skins, the pale colors of which Salvin tells us (*l. c.*) are due to fading. Comparison with freshly collected Central American specimens is needed to determine the status of the Andean form for which the name *Catharus maculatus* (Scl., P. Z. S., 1858, p. 64, Napo) is available.

La Candela, 8; Andalucia (5000 ft.) 3; Buena Vista, 4.

FAMILY VIREONIDÆ. VIREOS.

(3563) **Vireosylva olivacea** (*Linn.*).

Muscicapa olivacea LINN., Syst. Nat., I, 1766, p. 327 (Carolina).
Vireosylvia olivacea SCL. & SALV., P. Z. S., 1879, p. 495 (Medellin; Remedios).
Vireo olivaceus ALLEN, Bull. A. M. N. H., XIII, 1900, p. 173 (Santa Marta).

A specimen taken March 13, is in full prenuptial molt and is renewing both wings and tail.

Sta. Elena, 1, Dec. 1; Chicoral, 1, Oct. 9; Villavicencio, 1, March 13.

(3564) **Vireosylva flavoviridis flavoviridis** *Cass.*

Vireosylvia flavoviridis CASS., Proc. Acad. N. S. Phila., 1851, p. 152 (Panama).
Vireo flavoviridis ALLEN, Bull. A. M. N. H., XIII, 1900, p. 173 (Bonda).

Two specimens from Chicoral, are the only ones obtained.

(3565*a*) **Vireosylva chivi caucæ** *Chapm.*

Vireosylva chivi caucæ CHAPM., Bull. A. M. N. H., XXXI, 1912, p. 159 (Cali, Col.).

Char. subsp.— Differing from *Vireo chivi chivi* (Vieill.), as represented by a series of twenty-two specimens from Chapada, Matto Grosso, in being slightly darker, more olive-green above, with the crown deeper, more slaty, the superciliary whiter, the auricular region more olive-gray, less yellow; differing from *V. c. agilis* (Licht.), as represented by a large series from eastern Venezuela, Trinidad, and Santa Marta, Colombia, in being much darker above, olive-green rather than yellow-green, with the auricular region averaging more olive-gray, less yellow. Male, wing, 70; tail, 52; tarsus, 17; culmen, 12 mm. Female, wing, 66; tail, 48; tarsus, 17; culmen, 12 mm.

Inhabits the Tropical Zone in the Cauca Valley.

(3568) **Vireosylva josephæ josephæ** (*Scl.*).

Vireo josephæ Scl., P. Z. S., 1859, p. 137, pl. 154 (Pallatanga, Ecuador); Scl. & Salv., P. Z. S., 1879, p. 495 (Concordia; Medellin); Allen, Bull. A. M. N. H., XIII, 1900, p. 172 (Valparaiso; El Libano; Las Nubes; El Paramo de Macotama).

Inhabits the Subtropical Zone of all three ranges. Birds from the Magdalena region (La Candela, Fusugasugá, etc.) average browner than Cauca region birds, but are not as brown as old 'Bogotá' skins. The Cauca birds, on comparison with Ecuador specimens, appear to be typical in color, but all Colombian birds are larger than those from Ecuador. Santa Marta specimens closely resemble those from the upper Magdalena and are apparently nearer to *josephæ* than to *chiriquensis*.

San Antonio, 2; Cerro Munchique, 5; Ricaurte, 1; La Sierra, 1; Miraflores, 4; Salento, 2; Sta. Elena, 8; El Eden, 1; La Palma, 1; La Candela, 6; near San Agustin, 1; Fusugasugá, 2; El Roble, 2.

(3569) **Lanivireo flavifrons** (*Vieill.*).

Vireo flavifrons Vieill., Ois. Am., Sept. 1, 1807, p. 85, pl. 54 (e. United States); Wyatt, Ibis, 1871, p. 324 (Pirico); Allen, Bull. A. M. N. H., XIII, 1900, p. 173 (Onaca; Minca).

Sta. Elena, 1, Dec. 3.

(3579) **Pachysylvia semibrunnea** (*Lafr.*).

Hylophilus semi-brunneus Lafr., Rev. Zool., 1845, p. 341 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 495 (Concordia).

Inhabits the Subtropical Zone of all three ranges. We have also found it on one occasion in the Tropical Zone of the Cauca Valley.

Las Lomitas, 1; San Antonio, 1; La Manuelita, 1; Miraflores, 5; San Agustin, 1; Fusugasugá, 1.

(3590) **Pachysylvia flavipes flavipes** (*Lafr.*).

H[ylophilus] flavipes Lafr., Rev. Zool., 1845, p. 342 (Bogotá); Allen, Bull. A. M. N. H., XIII, 1900, p. 172 (Bonda; Santa Marta).

We have found this species only in the Tropical Zone of the Eastern Andes on both sides of the range and in the Magdalena Valley to La Playa. October specimens from Chicoral are much more richly colored below than March specimens from Villavicencio. The difference, however, appears to be seasonal.

La Playa, 1; Calamar, 2; Chicoral, 4; Villavicencio, 5.

(3595) **Pachysylvia minor** (*Berl. & Tacz.*).

Hylophilus minor BERL. & TACZ., P. Z. S., 1883, p. 542 (Chimbo, w. Ecuador).

A male from Los Cisneros extends the known range of this species into Colombia. It is somewhat darker above and has less greenish yellow below than Ecuador specimens.

Los Cisneros, 1.

(3603) **Cyclarhis flavipectus canticus** *Bangs.*

Cyclarhis flavipectus canticus BANGS, Proc. Biol. Soc. Wash., XII, 1898, p. 142 (Santa Marta); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 171 (Bonda).

We found this form only in the Magdalena Valley and a native skin purchased was from the western slope of the Eastern Andes. In the Tropical Zone at the eastern base of the range it is replaced by a well-marked representative form which appears to be unnamed.

Comparison of eleven topotypical examples of *flavipectus* with an equal number of topotypical specimens of *canticus* supports the claims of the last-named form to recognition as a well-marked race. It may be distinguished by its generally smaller bill, darker green upperparts, decidedly greener outer, paler yellow inner margins of the wing-feathers, more extensively and clearer yellow breast, and richer ochraceous wash on the flanks and abdomen.

Upper Magdalena Valley birds have the flanks and abdomen with less ochraceous tinge than in Santa Marta birds, but they have their small bill, generally dark green back and comparatively pale margins to the wing-quills, and, geographical reasons aside, are obviously to be referred to *canticus* rather than to *flavipectus*.

The ochraceous tinge on the flanks sometimes is present in other forms of this group but appears to be always evident in Santa Marta birds.

Chicoral, 2.

(3603*a*) **Cyclarhis flavipectus parvus** subsp. nov.

Char. subsp.— Smallest form of the group; color of upperparts as in *Cyclarhis flavipectus canticus* Bangs, and consequently appreciably darker than in *C. f. flavipectus* Scl., with the inner margins of the wing-quills paler yellow; yellow of underparts averaging greener and more restricted, the flanks whiter than in either *flavipectus* or *canticus*.

Type.— No. 122537, Am. Mus. Nat. Hist., ♂ ad., Villavicencio (alt. 1600 ft.), Colombia, March 7, 1913; George K. Cherrie.

This form ranges from Cristobal Colon in extreme northeastern Venezuela to the base of the Eastern Andes in Colombia. It doubtless therefore occupies all of Venezuela, at least east of the Gulf of Maracaibo and Colombia east of the Andes and north of Amazonia. *Cyclarhis flavipectus flavipectus* I should therefore restrict to the island of Trinidad, while *canticus* is confined to northern Colombia (and the west side of Maracaibo?) southward up the Magdalena Valley.

The characters of the form here proposed are, as might be expected, best shown by the Colombian specimens taken at the western limit of its range, but they are also shown, though to a less pronounced degree, in a good series from the Paria Peninsula. These birds are obviously not referable to the Trinidad form, and while they exhibit some approach toward *canticus* in size (especially the shortness of the tail) and color, they are nearer *parvus*. This proposed new form is represented in our collections by the following specimens:

Venezuela: Cristobal Colon, 7; Cumanacoa, 2; San Antonio, 2; Maripa, 3; Maipures, 2. *Colombia:* Villavicencio, 3; Buena Vista, 2.

There appears to be no sexual variation in size and both sexes are therefore included in the appended table.

Measurements.

	Specimens	Wing	Tail	Ex. Culmen
Trinidad	5	73.7	56.1	18.7
Cristobal Colon, Ven.	5	69.5	53	17
Maripa, "	3	69	54	16.6
Maipures, "	2	70	53	17
Santa Marta, Col.	5	71.4	57	16.8
Villavicencio,	5	68.4	53.4	16.2

(3611) **Cyclarhis nigrirostris** *Lafr.*

Cyclarhis nigrirostris Lafr., Rev. Zool., 1842, p. 133 (Colombia); Scl. & Salv., P. Z. S., 1879, p. 495 (Sta. Elena).

Inhabits the Subtropical Zone of all three ranges. A specimen from Ricaurte differs from the remaining sixteen in our series in having barely a trace of gray on the forehead, the underparts grayer, and the lower mandible black basally.

Salencio, 1; San Antonio, 1; Cerro Munchique, 2; Gallera, 1; Cocal, 2; Ricaurte, 1; Salento, 1; Sta. Elena, 2; Rio Toché, 1; La Palma, 1; Aguadita, 1.

FAMILY MNIOTILTIDÆ. WOOD-WARBLERS.

(3612) **Mniotilta varia** (*Linn.*).

Motacilla varia LINN., Syst. Nat., I, 1766, p. 333 (Santo Domingo).

Mniotilta varia WYATT, Ibis, 1871, p. 322 (Herradura); SCL. & SALV., P. Z. S., 1879, p. 493 (Concordia; Envigado, Sta. Elena); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 178 (Bonda; Las Nubes; Onaca); HELLM., P. Z. S., 1911, p. 1091 (Pueblo Rico; Loma Hermosa).

Caldas, 1, Nov. 20; Las Lomitas, 3, Feb. 27–Mch. 2; San Antonio, 1, Jan. 21; Rio Frio, 2, Nov. 28, 29; Salento, 5, Sept. 27–Nov. 10; Sta. Elena, 1, Nov. 20; El Eden, 1, Oct. 20; El Consuelo above Honda, 1, Feb. 7; Quetame, 1, Feb. 25.

(3613) **Protonotaria citrea** (*Bodd.*).

Motacilla citrea BODD., Tabl. Pl. Enl., 1783, p. 44 (Louisiana).

Protonotaria citrea SCL. & SALV., P. Z. S., 1879, p. 494 (Dep't Antioquia); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 178 (Bonda).

Algodonal, Jan. 23, 1 (Fuertes).

(3614) **Vermivora chrysoptera** (*Linn.*).

Motacilla chrysoptera LINN., Syst. Nat., 1, 1766, p. 333 (near Philadelphia, Pa.).

Helminthophaga chrysoptera SCL. & SALV., P. Z. S., 1879, p. 494 (Sta. Elena).

Helminthophila chrysoptera ALLEN, Bull. A. M. N. H., XIII, 1900, p. 178 (Bonda; Las Nubes; Minca; Pueblo Viejo).

Salento, 1, Nov. 13; El Eden, 1, Oct. 19; Villavicencio, 1, Mch. 11.

(3616) **Vermivora peregrina** (*Wils.*).

Sylvia peregrina WILS., Am. Orn., III, 1811, p. 83, pl. 25, fig. 2 (Cumberland River, Tenn.).

Helminthophaga peregrina WYATT, Ibis, 1871, p. 322 (Herradura); SCL. & SALV., P. Z. S., 1879, p. 494 (Concordia).

Helminthophila peregrina ALLEN, Bull. A. M. N. H., XIII, 1900, p. 178 (Bonda; Onaca; Las Nubes; Valparaiso; Minca).

Miraflores, 1, April 19; Sta. Elena, 1, Dec. 1; Buena Vista, 2, Mch. 1, 7.

(3618) **Compsothlypis pitiayumi elegans** *Todd.*

Compsothlypis pitiayumi elegans Todd, Ann. Carn. Mus., VIII, 1912, p. 204 (Tara Mt., Venezuela).
Parula pitiayumi, Wyatt, Ibis, 1871, p. 322 (Cocuta Valley).

Inhabits both the Tropical and Subtropical Zones, but has not been recorded from the humid Pacific coast fauna. Specimens from the Western and Central Andes have, on the average, less white on the wing-coverts than those from the Eastern Andes but in size agree with *elegans.* Specimens from Quetame in the Eastern Andes are typical of *elegans,* which appears to be not only more deeply colored below but is also a shade darker above than *pitiayumi,* of which we have eight specimens from Matto Grosso.

Caldas, 1; San Antonio, 2; Las Lomitas, 1; Gallera, 1; Rio Frio, 1; Miraflores, 4; Salento, 1; El Eden, 1; La Sierra, 1; La Candela, 1; Quetame, 4.

(3619) **Compsothlypis pitiayumi pacifica** (*Berl.*).

Parula pitiayumi pacifica Berl., P. Z. S., 1884, p. 286 (Surupata, Ecuador).

A male from Ricaurte (alt. 4500) in southwestern Colombia in its small size and the restriction of white on the wing-coverts agrees with the Ecuadorian form (of which we have ten specimens), while our other Colombian birds are referable to the Venezuelan form. It will be observed therefore that the two races most nearly related, that is, *pacifica* of Ecuador and *speciosa* of Chiriqui and northward, are apparently not connected geographically, there being as yet no form of this group known from the Pacific coast between Barbacoas and Chiriqui, while the bird inhabiting the mountains of western Colombia is referable to *C. p. elegans* of northeastern South America.

Measurements.

	Wing	Tail
Ecuador, 5 males, av.	50	35
Ricaurte, Col., 1 male	52.5	36
San Antonio, Col., 1 male,	54	42.5
Rio Frio, " 1 "	54.5	40
El Roble, " 1 "	54.5	40
Quetame, " 2 "	56	42
Ecuador, " 3 females	48.4	34
Gallera, " 2 "	51.5	38
Miraflores, " 3 "	51	39.5
Quetame, " 2 "	53	39

(3620) **Dendroica æstiva æstiva** (*Gmel.*).

Motacilla æstiva Gmel., Syst. Nat., I, 1789, p. 996 (Canada).

Dendroica æstiva Cass., Proc. Acad. N. S. Phila., 1860, p. 191 (Turbo); Allen, Bull. A. M. N. H., XIII, 1900, p. 177 (Bonda).

Dendrœca æstiva Wyatt, Ibis, 1871, p. 322 (Ocaña); Scl. & Salv., P. Z. S., 1879, p. 494 (Medellin).

Dendroica æstiva æstiva Hellm., P. Z. S., 1911, p. 1091 (Condoto; Sipi).

Barbacoas, 2, Oct. 3, 6; San José, 1; Rio Frio, 1, Nov. 25; Calamar, 3, Jan. 22, 1, Nov. 4; Boca de Chimi, 1, Nov. 6; Honda, 3, Feb. 3, 6; Chicoral, 1, Oct. 9; San Agustin, 1, April 12; Bogotá, 1, Feb. 9.

(3621) **Dendroica petechia æquatorialis** *Sund.*

Dendroica petechia æquatorialis Sund., Ofv. K. Vet. Ak. Stockh., XXVI, 1870, p. 609 (Guayaquil, w. Ecuador).

Nine adult males from southwest Colombia and the coast of Ecuador south to Puna Island resemble twelve adult males of *D. p. aureola* from the Galapagos (loaned by the Nat. Museum), but have the underparts much more broadly streaked. In five specimens these streaks tend to coalesce on the throat which then becomes largely orange-rufous. The most lightly streaked specimen in the series (Bahia de Caraque, Ec.) can be approximately matched by the most heavily streaked specimen in the Galapagos series, showing that although we have a well-marked form in *æquatorialis* it is not sufficiently differentiated to escape intergradation by individual variation.

It should be especially noted that north of Tumaco no form of this group has been recorded from the Pacific coast of Colombia.

Tumaco, 8.

(3628) **Dendroica cærulea** (*Wils.*).

Sylvia cærulea Wils., Am. Orn., II, 1810, p. 141, pl. 17, fig. 5 (Pennsylvania).

Dendrœca cærulea Scl. & Salv., P. Z. S., 1879, p. 494 (Medellin).

Buena Vista, 2, March 4, 5.

(3629) **Dendroica fusca** (*Müll.*).

Motacilla fusca Müll., Syst. Nat. Suppl., 1776, p. 175 (Guiana).

Dendroica blackburniæ Wyatt, Ibis, 1871, p. 322 (Alto to near Pamplona); Scl. & Salv., P. Z. S., 1879, p. 494 (Concordia; Medellin; Sta. Elena; Remedios).

Dendroica blackburniæ Allen, Bull. A. M. N. H., XIII, 1900, p. 178 (Las Nubes; Valparaiso).

One of the most common of North American migrants found in all three ranges mainly in the Subtropical Zone, but ranging upward to the Temperate Zone.

San Antonio, 10, Jan. 16–April 4; Miraflores, 2, April 20, 27; Salento, 5, Oct. 1–Nov. 10; Sta. Elena! Nov. 15; Laguneta, 1, Sept. 9; Santa Isabel (12000 ft.), 1, Sept. 22; El Eden, 3, Oct. 18–20; La Sierra, 1, Mch. 1; Almaguer, 2, Mch. 13; San Agustin, 2, Apl. 11, 14; Chicoral, 1, Oct. 9; La Porquera, 1, Apl. 24; Puente Andalucia, 2, Apl. 22; El Roble, 2; Apl. 2, 4; Quetame, 1, Feb. 25; Buena Vista, 3, Mch. 1–4.

(3630) **Dendroica castanea** (*Wils.*).

Sylvia castanea Wils., Am. Orn., II, 1810, p. 97, pl. 14, fig. 4 (Pennsylvania).

Dendroica castanea Cass., Proc. Acad. N. S. Phila., 1860, p. 193 (Turbo; R. Truando); Allen, Bull. A. M. N. H., XIII, 1900, p. 177 (Bonda).

Dendrœca castanea Wyatt, Ibis, 1871, p. 322 (Naranjo); Scl. & Salv., P. Z. S., 1879, p. 494 (Remedios); Hellm., *Ibid.*, 1911, p. 1091 (Nóvita).

The number of specimens from the Pacific littoral, whence Hellmayr also records three specimens, indicates the comparative frequency of the species in that region. February specimens are in prenuptial molt, which is completed in a specimen taken March 10.

Alto Bonito, 1, Feb. 21; Dabeiba, 2, Feb. 14, 25; Juntas de Tamaná, 1, Dec. 17; Nóvita, 1, Dec. 21; Puerto Valdivia, 1, Dec. 16; Rio Frio, 1, Nov. 23; Honda, 1, Feb. 4; Malena, 1, Mch. 10.

(3631) **Dendroica striata** (*Forst.*).

Muscicapa striata Forst., Philos. Trans., LXII, 1772, pp. 406, 428 (Fort Severn, Hudson Bay).

Dendroica striata Allen, Bull. A. M. N. H., XIII, 1900, p. 177 (Bonda).

Rio Frio, 1, Nov. 25; Buena Vista, 1, March 7; Villavicencio, 2, March 10, 11.

(3634) **Oporornis philadelphia** (*Wils.*).

Sylvia philadelphia Wils., Am. Orn., II, 1810, p. 101, pl. 14, fig. 6 (near Philadelphia, Pa.).

Geothlypis philadelphia Wyatt, Ibis, 1871, p. 322 (Ocaña); Scl. & Salv., P. Z. S., 1879, p. 494 (Sta. Elena; Medellin); Allen, Bull. A. M. N. H., XIII, 1900, p. 176 (Chirua; La Concepcion).

Dabeiba, 1, Feb. 12; Rio Frio, 1, Nov. 25; Salencio, 1, Dec. 10; Puerto Berrio, 1, Jan. 30; Honda, 2, Feb. 6, 7; Chipaque, 1, Feb. 25; Buena Vista, 1, March 7; Villavicencio, 2, March 12, 14.

(3637) **Seiurus noveboracensis noveboracensis** (*Gmel.*).

Motacilla noveboracensis Gmel., Syst. Nat., 1, 1789, p. 958 (Louisiana).
Henicocichla noveboracensis Wyatt, Ibis, 1871, p. 322 (Ocaña; Bucaramanga).
Seiurus noveboracensis Allen, Bull. A. M. N. H., XIII, 1900, p. 177 (Bonda; Cienaga; Minca; La Concepcion; Chirua).

Only two of our series of twenty specimens of this species seem wholly typical of this race. About the same number are typical of *notabilis* and the remainder are intermediate but nearer *notabilis,* though it is largely a matter of opinion, in some cases, on which side the line certain specimens are placed.

Chicoral, 1; Rio Frio, 1.

(3638) **Seiurus noveboracensis notabilis** *Ridgw.*

Siurus nævius notabilis Ridgw., Proc. U. S. N. M., III, 1880, p. 12 (Como Lake, Wyoming).
? *Seiurus noveboracensis* Scl. & Salv., P. Z. S., 1879, p. 493 (Concordia; Medellin).
Seiurus noveboracensis notabilis Allen, Bull. A. M. N. H., XIII, 1900, p. 177 (Chirua).
? *Seiurus noveboracensis noveboracensis* Hellm., P. Z. S., 1911, p. 1091 (Sipi).

Found in both the Tropical and Subtropical Zones. Few of our specimens are typical of this form but on the whole the greater number are, in the opinion of Mr. Waldron Miller and myself, nearer to it than they are to *noveboracensis.*

Alto Bonito, 1, Feb. 19; La Playa, 1, Mch. 25; Juntas de Tamaná, 1, Dec. 19; San José, 2, Dec. 5; Caldas, 1, Nov. 21; Puerto Valdivia, 2, Dec. 17, 24; Salento, 3, Oct. 1–Nov. 13; Rio Toché, 2, Oct. 23, 24; San Agustin, 1, Apl. 2, 4; Chicoral, 2, Oct. 8, 12; Honda, 1, Feb. 3; Puerto Berrio, 1, Jan. 30.

(3640) **Geothlypis semiflava** *Scl.*

Geothlypis semiflava Scl., P. Z. S., 1860, p. 273 (Esmeraldas, Ecuador).

Found in the Tropical Zone of the Pacific coast and also in the Cauca Valley. Our specimens agree with others from western Ecuador.

Los Cisneros, 1; Caldas, 1; Ricuarte, 3; Buenavista, Nariño, 3; Cali, 1.

(3641) **Geothlypis æquinoctialis** (*Gmel.*).

Motacilla æquinoctialis Gmel., Syst. Nat., I, 1789, p. 972 (Cayenne).

Found in tall grasses in the Magdalena Valley and at the eastern base of the Andes.

Puerto Berrio, 1; Villavicencio, 3.

(3647) **Wilsonia canadensis** (*Linn.*).

Muscicapa canadensis Linn., Syst. Nat., I, 1766, p. 327 (Canada).

Found in the Tropical and Subtropical Zones.

Alto Bonito, 1, Feb. 21; San Antonio, 5, Jan. 5–Apl. 2; Rio Frio, 1, Nov. 24; El Eden, 2, Oct. 19; San Agustin, 2, Apl. 9, 10; Chicoral, 1, Oct. 12; Fusugasugá, 1, Mch. 28; Buena Vista, 2, Mch. 1, 15.

(3648) **Setophaga ruticilla** (*Linn.*).

Motacilla ruticilla Linn., Syst. Nat., I, 1758, p. 186 (Virginia).

Setophaga ruticilla Wyatt, Ibis, 1871, p. 323 (Herradura; Ocaña to Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 494 (Concordia; Medellin); Hellm., P. Z. S., 1911, p. 1093 (Nóvita; Pueblo Rico; Siató); Allen, Bull. A. M. N. H., XIII, 1900, p. 176 (Bonda; Valparaiso).

Inhabits both the Tropical and Subtropical Zones throughout the region explored.

Dabeiba, 1, Feb. 25; Puerto Valdivia, 1, Dec. 18; Barbacoas, 1, Oct. 6; San Antonio, 3, Jan. 20–Feb. 19; Cali, 1, Dec. 3; Rio Frio, 1, Dec. 1; Salento, 1, Sept. 28; Honda, 2, Feb. 7, 8; Buena Vista, 2, March 2, 3.

(3649) **Myioborus verticalis verticalis** (*d'Orb. & Lafr.*).

Setophaga verticalis d'Orb. & Lafr., Syn. Av., I, p. 50, Mag. de Zool., 1837 (Ayupaya, Bolivia); Wyatt, Ibis, 1871, p. 323 (Alto; Santa Rosa; Canuto, etc., 5000–7000 ft.); Scl. & Salv., P. Z. S., 1879, p. 495 (Concordia; Sta. Elena); Allen, Bull. A. M. N. H., XIII, 1900, p. 176 (Las Nubes; Valparaiso; El Libano).

One of the most common species of the Subtropical Zone in all three ranges. Birds from the Cauca region average more richly colored below than those from about Bogotá. In this respect the latter agrees with a single specimen from Inca Mine, Peru.

Paramillo (9000 ft.), 1; Las Lomitas, 6; San Antonio, 7; near Popayan, 1; Cerro Munchique, 2; Gallera, 2; La Sierra, 1; Miraflores, 9; Salento, 2;

Sta. Elena, 4; Barro Blanco, 1; Rio Toché, 1; El Eden, 1; La Candela, 3; near San Agustin, 8; Andalucia, 1; Fusugasugá, 7; El Roble, 3.

(3655) **Myioborus ornatus** (*Boiss.*).

Setophaga ornata Boiss., Rev. Zool., 1840, p. 70 (Bogotá); Wyatt, Ibis, 1871, p. 323 (Portrerras).

A not uncommon inhabitant of the Temperate Zone of the Eastern Andes, descending to the upper border of the Subtropical Zone. Specimens from Chipaque on the eastern slope are paler than those from the more humid western slope at El Piñon, which are quite as richly colored as *M. chrysops*, but our series is not large enough to prove that the variations observed are racial.

Chipaque, 2; El Piñon, 2; El Roble, 1.

(3656) **Myioborus chrysops** (*Salv.*).

Setophaga chrysops Salv., Ibis, 1878, p. 314, pl. vii, fig. 2 (Sta. Elena); Scl. & Salv., P. Z. S., 1879, p. 495 (Retiro; Sta. Elena; Frontino).

An abundant inhabitant of the Temperate Zone in the Central and Western Andes. In crossing the Central range it was first met with at about 9000 feet on the western slope at the upper border of the Subtropical Zone. After crossing the Quindio Pass its numbers increased and in the valleys of the Tochicito and Toché it was abundant as low as 8000 feet. Although this species obviously represents *M. ornatus*, our series of twenty-seven specimens shows no indication of intergradation with that species through the presence of white in the ocular region. As remarked, however, under that species, *ornatus* from the humid Temperate Zone at El Piñon has the forehead and underparts as richly colored as *chrysops*.

Paramillo, 1; Crest of Andes, west of Popayan, 12; Cocal (alt. 6000 ft.), 1; Laguneta, 8; Santa Isabel, 1; Sta. Elena, 3; Rio Toché, 2; El Eden, 2; Almaguer, 1; Valle de las Pappas, 2.

(3660) **Myiothlypis nigrocristatus** (*Lafr.*).

Trichas nigro-cristatus Lafr., Rev. Zool., 1840, p. 230 (Bogotá).
Basileuterus nigricristatus Scl. & Salv., P. Z. S., 1879, p. 494 (Sta. Elena).

Common in the Temperate Zone of the Eastern Andes, but apparently less numerous in the Central Andes.

Santa Isabel, 1; El Eden, 2; Valle de las Pappas, 1; Chipaque, 7; El Roble, 1; El Piñon, 2.

(3663) **Basileuterus luteoviridis** (*Bonap.*).

Myiothlypis luteo-viridis Bonap., Consp. Av., II, 1850, p. 311 (Bogotá).

Inhabits both the Eastern and Central Andes. Three specimens from Almaguer south of Popayan average somewhat darker above and duller below than three from the Bogotá region.

Generically this and the next species are intermediate between *Myiothlypis* (type *M. nigrocristatus*) and *Basileuterus* (type *B. auricapillus*), but on the whole seem best left in the last-named genus.

Almaguer, 3; Fómeque, 1; Subia, 1.

(3663*a*) **Basileuterus richardsoni** *Chapm.*

Basileuterus richardsoni Chapm., Bull. A. M. N. H., XXXI, 1912, p. 160 (Andes w. of Popayan, alt. 10,340 ft.).

Char. sp.— Most closely related to *Basileuterus luteoviridis* (Bp.), but upperparts dark olive-green instead of bright yellowish olive-green, underparts much paler, superciliary whitish, instead of yellow.

Inhabits the Temperate Zone of the Western and Central Andes. The occurrence of this species at Laguneta and of *B. luteoviridis* at Almaguer in the Central Andes indicates that they are not representative species. The Laguneta specimen is in fresh plumage and is decidedly more yellow below than specimens from the type-locality. The supra-loral stripe, however, is but faintly tinged with yellow and would evidently be whitish in worn plumage as it is in six of the seven topotypes, whereas in the Almaguer specimens of *luteoviridis* it is bright yellow, like the underparts. There is much sexual variation in this species the male having the wing from four to eleven millimetres longer than in the female.

Andes w. of Popayan, alt. 10,340 ft., 7; Laguneta, 1.

(3667) **Basileuterus cinereicollis** *Scl.*

Basileuterus cinereicollis Scl. P. Z. S., 1864, p. 166 (Bogotá); *Ibid.*, 1865, p. 285, pl. IX, fig. 2.

Found only in the heavy forests at Buena Vista on the eastern slope of the Eastern Andes where, although not uncommon, it is rather difficult to secure, a fact which probably accounts for its comparative rarity in Bogotá collections. Our six specimens doubtless typically represent *cinereicollis* described from "Bogotá") and show that the Santa Marta representatives of this species which, in the absence of proper material for comparison Dr.

Allen[1] referred to *cinereicollis*, form a strongly marked race to which the name *Basileuterus conspicillatus* Salv. & Godm.[2] is evidently applicable. It differs from *cinereicollis* in being more yellow above; in having the nape grayer, the black crown-lines more extended posteriorly, the coronal patch usually ochraceous-orange and never so conspicuous or so yellow, the supraloral stripe always well-developed; the bill smaller, and the gray throat more restricted. These characters are all present in each of our twenty-nine specimens of the Santa Marta bird which, in view of its probable isolation, may doubtless be accorded specific rank.[3]

Buena Vista, 6.

(3668) **Basileuterus cabanisi** *Berl.*

Basileuterus cabanisi Berl., Orn. Centralbl., 1879, p. 63 (Puerto Bello, Venez.); Allen, Bull. A. M. N. H., XIII, 1900, p. 176 (Minca; Las Nubes; Oñaca; Santa Marta).

The crown in our male from Peque is ochraceous-orange; in the Miraflores bird it is more ochraceous. In *cabanisi* it is usually yellow but both our specimens can be matched in a series of eleven *cabanisi*, one from Onaca agreeing with the Peque bird, one from Merida, Venezuela, with the example from Miraflores. This species appears not to have been before recorded from either the Central or Western Andes.

Peque, 1; Miraflores, 1.

(3669) **Basileuterus tristriatus tristriatus** (*Tsch.*).

Myiodioctes tristriatus Tsch., Arch. für Naturg., 1844, p. 283 (Peru).

Basileuterus tristriatus tristriatus Hellm., P. Z. S., 1911, p. 1092 (Pueblo Rico, 5200 ft.).

Basileuterus melanotis dædalus Bangs, Proc. Biol. Soc. Wash., XXI, 1908, p. 160 (San Antonio).

Common in the Subtropical Zone of all three ranges. Comparison of our series of thirty-seven specimens with five specimens from Peru and Bolivia confirms Hellmayr's reference of the Colombian bird to the Peruvian form. The northern bird is somewhat larger (wing, 65 mm. in four males from San Antonio, 60 mm. in two from Inca Mine, Peru) but agrees in color with the southern one, about an equal amount of variation in the coronal patch and color of the underparts being shown by both series.

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[1] Bull. Am. Mus. Nat. Hist., XIII, 1900, p. 175.

[2] Ibis, 1880, p. 117 (San José, Sierra Nevada de Santa Marta).

[3] Mr. W. E. C. Todd calls my attention to Sharpe's statement (Hand-List of Birds, V, p. 123) that Hellmayr has no doubt of the identity of *conspicillatus* and *cinereicollis*, and adds that, in his judgment, Sclater's name is based on a specimen from the Santa Marta mountains and that the Bogotá bird, therefore, requires a new name. This question, however, can be decided only by comparison of the type of *cinereicollis* with adequate series from both the Santa Marta and Bogotá regions.

La Frijolera, 1; Las Lomitas, 2; San Antonio, 7; Gallera, 3; Cerro Munchique, 2; Miraflores, 5; Salento, 6; La Candela, 5; La Palmas, 2; San Agustin, 2; Fusugasugá, 3.

(3674) **Basileuterus coronatus** (*Tsch.*).

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Myiodioctes coronatus Tsch., Arch. für Naturg., 1844, i, p. 283 (Peru).
Basileuterus coronatus Scl. & Salv., P. Z. S., 1879, p. 494 (Sta. Elena).

Sometimes reaches the lower border of the Temperate Zone and is common in the Subtropical Zone of the Western and Central Andes and of the western slope of the Eastern Andes. Our series of forty-one specimens shows but little individual and apparently no racial variation and agrees with a single specimen from Inca Mine, Peru.

San Antonio, 12; Las Lomitas, 1; Cerro Munchique, 9; Miraflores, 1; Salento, 5; Laguneta, 3; Sta. Elena, 4; El Eden, 3; Almaguer, 1; La Candela, 1; Subia, 3; Fusugasugá, 4; El Roble, 2.

(3676) **Basileuterus bivittatus chlorophrys** *Berl.*

Basileuterus bivittatus chlorophrys Berl., Proc. 4th Int. Cong., 1907, p. 347 ("Quito" = w. Ecuador).

Two specimens from the Tropical Zone in southwestern Colombia agree with the description of this form hitherto known only from the two "Quito" skins on which the race is based.

Buenavista, Nariño, 2.

(3680) **Basileuterus auricapillus olivascens** *Chapm.*

Basileuterus vermivorus olivascens Chapm., Auk, 1893, p. 343 (Princestown, Trinidad).

Four specimens from Buena Vista, on the eastern slope of the Eastern Andes, and one from Villavicencio essentially agree in color with a series from Trinidad, but have the upperparts and auricular region slightly darker, a difference possibly due to fading in the Trinidad specimens, though the latter were taken in 1893. The Buena Vista specimens are materially different from old Bogotá and Guiana (?) skins in which the upperparts are strongly suffused with brownish. Two males average, wing, 63; tail, 54; tarsus, 19.5 mm., while Trinidad and northeast Venezuela males average wing, 58; tail, 52 mm.

Buena Vista, 4.

(3682) **Basileuterus rufifrons mesochrysus** *Scl.*

Basileuterus mesochrysus Scl., P. Z. S., 1860, p. 251 (Bogotá); Wyatt, Ibis, 1871, p. 323 (Herradura; Cocuta Valley); Allen, Bull. A. M. N. H., XIII, 1900, p. 176 (Bonda; Minca; Cacagualito; Manaure; Chirua; Santa Marta; Palomina).

Found only in the semi-arid Tropical Zone of the Magdalena River.

Near Honda, 1; Chicoral, 3; below Andalucia (3000 ft.), 10.

(3690) **Basileuterus fulvicauda semicervinus** *Scl.*

Basileuterus semicervinus Scl., P. Z. S., 1860, p. 84 (Nanegal, w. Ecuador); Scl. & Salv., P. Z. S., 1879, p. 494 (Remedios; Neché).

Basileuterus fulvicauda semicervinus Hellm., P. Z. S., 1911, p. 1092 (Juntas, R. Dagua; Rio Garrapatas; Sipi).

Inhabits the Tropical Zone of the Pacific coast and extends eastward through Antioquia where the more olive-green color of four specimens from Peque and Puerto Valdivia show that it evidently merges into the gray-crowned, olive-green backed Magdalena Valley form. Our specimens agree with a series from western Ecuador.

Alto Bonito, 2; Bagado, 1; Juntas de Tamaná, 3; Nóvita, 1; San José, 5; Barbacoas, 6; Ricaurte, 1; Puerto Valdivia, 1; Peque, 1.

(3691) **Basileuterus fulvicauda fulvicauda** (*Spix*).

Muscicapa fulvicauda Spix, Av. Bras., II, 1825, p. 20, pl. xxviii (Brazilian Amazons) = *Basileuterus uropygialis* Scl., P. Z. S., 1861, p. 128 (Brazil). *Cf.* Hellm., Abhk. Akad. der Wiss., 1906, p. 652.

With but one specimen from Chicoral and two 'Bogotá' skins, I am unable to determine satisfactorily the status of this species in the Magdalena Valley and Bogotá region. It is evident that two forms are represented by these three specimens. Probably the Bogotá skins came from the Villavicencio region when they should perhaps be referred to *B. f. fulvicauda* (Spix), while the Chicoral bird should be described as new. Although obviously faded, the Bogotá skins have the underparts and basal part of the tail darker in color while the crown is darker, less ashy and the back browner; the color of this part, however, has unquestionably changed. These

Bogotá skins are in fact nearer to *semicervinus* than to the Chicoral bird, but are deeper and more uniformly colored below.

In default of authentic specimens of *fulvicauda* further discussion of the status of the Bogotá form or forms must be deferred.

Chicoral, 1.

FAMILY MOTACILLIDÆ. PIPITS, WAGTAILS.

(3694) **Anthus bogotensis** *Scl.*

Anthus bogotensis SCL., P. Z. S., 1855, p. 109 (Bogotá); WYATT, Ibis, 1871, p. 322 (Paramo of Pamplona).

In Colombia known only from the Temperate Zone of the Eastern Andes.

Subia, 1; Choachi, 3.

FAMILY ALAUDIDÆ. LARKS.

(3702) **Otocoris alpestris peregrina** *Scl.*

Otocorys peregrina SCL., P. Z. S., 1855, p. 110 (Bogotá).

This interesting representative of a boreal species is apparently restricted to the Savanna of Bogotá where, at least in the vicinity of the city, it is abundant. One, taken Feb. 19, is in juvenal plumage and evidently but a few days from the nest.

Bogotá Savanna, 12; La Mar, 2; La Holanda, 2; El Carmen, 2.

FAMILY CATAMBLYRHYNCHIDÆ. PLUSH-CAPPED FINCHES.

(3703) **Catamblyrhynchus diadema** *Lafr.*

Catamblyrhynchus diadema LAFR., Rev. Zool., 1842, p. 301 (Colombia); SCL. & SALV., P. Z. S., 1879, p. 507 (Sta. Elena).

Inhabits the Temperate and upper part of the Subtropical Zones of all three ranges, though we took it only in the Western and Central Andes.

Andes w. of Popayan (10,340 ft.), 2; above Salento, (9000 ft.), 1; El Eden, 3.

FAMILY FRINGILLIDÆ. FINCHES, SPARROWS, BUNTINGS, GROSBEAKS, SALTATORS, ETC.

(3707) **Pheucticus uropygialis uropygialis** *Scl. & Salv.*

Pheucticus uropygialis SCL. & SALV., P. Z. S., 1870, p. 840 ('Bogotá'); WYATT, Ibis, 1871, p. 327 (Matisuga).

Not uncommon in the Temperate Zone of the Eastern Andes. It appears to be absent from the other ranges.

La Mar, 1; Palo Hueco, 1; Subia, 2; Fómeque, 1; Chipaque, 3.

(3710) **Zamelodia ludoviciana** (*Linn.*).

Loxia ludoviciana LINN., Syst. Nat., I, 1766 (Louisiana).

Hedymeles ludovicianus WYATT, Ibis, 1871, p. 328 (Herradura); SCL. & SALV., P. Z. S., 1879, p. 506 (Dept. Antioquia).

Zamelodia ludoviciana ALLEN, Bull. A. M. N. H., XIII, 1900, p. 164 (Masinga Vieja; Valparaiso; Minca; Santa Marta).

A male taken at Buena Vista March 4, is growing new wings and tail and is apparently about to undergo a complete prenuptial molt.

Paramillo, Jan. 28; Barro Blanco, 2, Nov. 27, 28; Salento, 2, Buena Vista, 2, Mch. 4.

(3712) **Cyanocompsa concreta cyanescens** *Ridgw.*

Cyanocompsa concreta cyanescens RIDGW., Auk, XV, 1898, p. 229, (Panama).

Guiraca cyanoides SCL. & SALV., P. Z. S., 1879, p. 506 (Remedios).

Inhabits the Tropical Zone of the Pacific coast. Our specimens agree with a series from eastern Panama.

Salaqui, 1; Cocal, 1; Barbacoas, 3.

(3714*a*) **Cyanocompsa cyanea caucæ** *Chapm.*

Cyanocompsa cyanea caucæ CHAPM., Bull. A. M. N. H., XXXI, 1912, p. 163 (La Manuelita, near Palmira, Col.).

Char. subsp.— Similar to *Cyanocompsa cyanea cyanea* (Linn.) but base of maxilla more inflated laterally, azure frontal band in male narrower, female decidedly paler, the general tone of the back being cinnamon wood-brown rather than russet mars-brown, of the rump and underparts, cinnamon rather than russet.

Inhabits open, scrubby areas in the Tropical Zone of the Cauca Valley and Caldas basin.

Palmira, 2; Caldas, 5.

(3718) **Oryzoborus angolensis** (*Linn.*).

Loxia angolensis Linn., Syst. Nat., I, 1766, p. 303 ("Angola"; Hellmayr substitutes east Brazil).

Andalucia, 1 ♂; Villavicencio, 1 ♀.

(3722) **Oryzoborus crassirostris crassirostris** (*Gmel.*).

Loxia crassirostris Gmel., Syst. Nat., I, 1789, p. 862 (Guiana).

A pair from Villavicencio; the male with the wing 67 mm. as compared with 72 mm. in a Trinidad specimen.

Villavicencio, 2.

(3723*a*) **Oryzoborus funereus** *Scl.*

Oryzoborus funereus Scl., P. Z. S., 1859, p. 378 (Oaxaca); Scl. & Salv., *Ibid.*, 1879, p. 506 (Medellin); Allen, Bull. A. M. N. H., XIII, 1900, p. 165 (Minca; Chirua; La Concepcion).

Oryzoborus funereus æthiops Hellm., P. Z. S., 1911, p. 1098 (R. Calima).

Ten specimens from the Tropical Zone of the Pacific coast and Cauca Valley, are evidently all of one form and in default of a series from Ecuador I refer them to *funereus*, with our Central American specimens of which they agree.

Measurements.

			Wing	Tail
Nicaragua	3	males (Ridgw.)	55.6	48.7
Panama	1	"	56.5	50
Nóvita	1	"	55.5	47.5
Barbacoas	2	"	55	50
Naranjo, Manavi, Ecuador, 1 male			56	51.5
Rio Frio, Col., 2 males			55.5	48

It will be observed that the largest bird in the table is from Ecuador, whence *æthiops* Scl. was described. I have, however, no females from Ecuador, which are said to be duller in tone than Central American females.

Atrato River, 1 ♀; Nóvita, 1 ♂; Buenaventura, 2 ♀; Barbacoas, 2 ♀; Rio Frio, 3 ♀.

(3735) **Sporophila grisea grisea** (*Gmel.*).

Loxia grisea Gmel., Syst. Nat., I, 1788, p. 857 (Guiana).
Spermophila grisea Scl. & Salv., P. Z. S., 1879, p. 507 (Envigado; Medellin).
Sporophila grisea Allen, Bull. A. M. N. H., XIII, 1900, p. 166 (Cienaga; Santa Marta).

Inhabits open or arid places in the Tropical Zone and advances to the Subtropical Zone along roadsides, trails and through clearings where grass and weed seeds may be obtained.

I observe no approach toward the Panama form *S. g. schistacea* except in the greater amount of white on the belly shown by some specimens. This, however, appears to be individual.

Caldas, 4; Las Lomitas, 1; San Antonio, 1; Cali, 1; Miraflores, 3; Popayan, 1; San Agustin, 1; below Andalucia (alt. 3000 ft.), 4; Chicoral, 1; Honda, 1; Puerto Berrio, 1; Buena Vista, 2; Villavicencio, 1.

(3743) **Sporophila castaneiventris** *Cab.*

Sporophila castaneiventris Cab., in Schomb. Reis. Guian., III, 1848, p. 679 (Guiana).

La Morelia, 1.

(3745) **Sporophila minuta minuta** (*Linn.*).

Loxia minuta Linn., Syst. Nat., I, 1758, p. 176 (Surinam).
Spermophila minuta Wyatt, Ibis, 1871, p. 328 (Ocaña; Paturia).
Sporophila minuta Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Honda); Allen, Bull. A. M. N. H., XIII, 1900, p. 166 (Bonda; Oñaca; Cienaga).

Abundant in the arid or semi-arid Tropical Zone following up the trail or clearings where grasses grow to the lower border of the Temperate Zone.

Caldas, 1; Cali, 1; Rio Frio, 1; La Manuelita, 4; Miraflores, 1; Barro Blanco, 3; San Agustin, 1; Chicoral, 2; Honda, 1; Puerto Berrio, 2; Malena, 2; Calamar, 2; Quetame, 2.

(3758*a*) **Sporophila aurita aurita** (*Bonap.*).

Spermophila aurita Bonap., Consp. Av., II, 1850, p. 497 ("Brazil" = Panama?).

Our series of thirty-three males from the Pacific coast (Dabeiba to Prov. Guayas, Ecuador) shows a gradual change from a bird in which the breast is largely black, the breast-band broad, and the sides showing more or less black, to one in which the throat is white with sometimes two black malar spots, or streaks, and the sides white. Specimens from San José and Cisneros are intermediate but on the whole are nearer to the southern form, while those from Noanamá and northward are all referable to *aurita*. Three of them have the rump only lightly tipped with grayish, a condition shown by only one of the more southern birds. So far as it goes, therefore, this series indicates normal geographic intergradation.

Dabeiba, 1; Quibdó, 2; Bagado, 1; Nóvita, 3; Noanamá, 3.

(3759) **Sporophila aurita ophthalmica** (*Hellm.*).

Spermophila aurita Scl., P. Z. S., 1860, p. 276 (Babahoyo, w. Ecuador).

Sporophila ophthalmica Hellm., P. Z. S., 1911, p. 1098 (R. Calima; Guineo; Sipi).

As remarked under the preceding species, specimens from San José and Cisneros, while intermediate, seem referable to this race rather than to *aurita*, while those from Barbacoas and Tumaco are fairly typical of *ophthalmica* (14 males) though the white patch at the base of the primaries averages smaller.

San José, 3; Los Cisneros, 4; Tumaco, 4; Barbacoas, 6.

(3759*a*) **Sporophila aurita murallæ** *Chapm.*

Sporophila aurita murallæ Chapm., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 649 (La Morelia, Caquetá, Col.).

Char. subsp.— Most nearly related to *S. a. ophthalmica* but larger throughout, the black breast-band averaging narrower (nearly incomplete in one specimen), sides grayer, white patch at base of primaries smaller, lesser wing-coverts narrowly tipped with white, greater ones less frequently with white near the end of shaft.

Found by us only in Amazonian Colombia where it is separated from its nearest relative by the Andean system.

La Morelia, 3.

(3764) **Sporophila gutturalis** (*Licht.*).

Fringilla gutturalis Licht., Verz. Doubl., 1823, p. 26 (San Paulo).

Spermophila gutturalis Wyatt, Ibis, 1871, p. 328 (Ocaña); Scl. & Salv., P. Z. S., 1879, p. 507 (Medellin; Envigado).

Sporophila gutturalis Allen, Bull. A. M. N. H., XIII, 1900, p. 166 (Cacagualito; Onaca; Palomina).

An abundant species in the Tropical Zone and with other small seed-eaters following the trails and clearings into the Subtropical Zone. Three males from Quetame and Buena Vista, agree in having the throat olive-black and the black on the head restricted to a narrow frontal band.

Possibly these three birds, which appear to be mature, may represent the form described by von Berlepsch as *pallida*.[1] I cannot, however, separate our remaining Colombian specimens, including two adult males from Subia near Bogotá and a series from Santa Marta, from specimens of *gutturalis* from Bahia and Matto Grosso.

Nóvita, 1; Los Cisneros, 1; Caldas, 3; San Antonio, 3; Barbacoas, 2; Buenavista, Nariño, 3; Ricaurte, 1; Cali, 1; La Manuelita, 1; Rio Frio, 1; Miraflores, 3; La Candela, 1; San Agustin, 3; below Andalucia (3000 ft.), 2; Subia, 3; La Morelia, 1; Quetame, 2; Buena Vista, 4 ♀.

(3771) **Sporophila luctuosa** (*Lafr.*).

Spermophila luctuosa Lafr., Rev. Zool., 1843, p. 291 (Colombia), Scl. & Salv., P. Z. S., 1879, p. 507 (Medellin).
Sporophila luctuosa Allen, Bull. A. M. N. H., XIII, 1900, p. 166 (Masinga Vieja).

This species appears to be far less common than the other representatives of its genus taken by us in Colombia.

Barro Blanco, 4; Anolaima, 1.

(3773) **Catamenia inornata minor** *Berl.*

C[atamenia] inornata minor Berl., P. Z. S., 1885, p. 115 (Cechce, Ecuador).

Specimens from the Paramo Zone of the Central Andes are slightly larger than others from Pichincha and Chimborazo, Ecuador. All, however, agree in color and differ from specimens from Oroya, Peru, in being smaller, while in *minor* the fully adult male has the back more strongly streaked with black. Females from La Pradera, on the Bogotá Savanna, and Choachi, are apparently to be referred to this race.

Santa Isabel, 6; Valle de las Pappas, 5; La Pradera, 1; Paramo de Choachi, 1.

Measurements.

	Place	Sex	Wing	Tail	Culmen
Catamenia i. inornata,	Oroya, Peru	♂	70.5	62	9.5
“ “ “	“ “	♂	71.5	61.5	9.5
“ “ “	“ “	♂	71.5	63	9.5
Catamenia i. minor,	Mt. Pichincha, Ec.	♂	64.5	56.5	9.5
“ “ “	‘Gualea,’ Ec.	♂	66.5	57	10
“ “ “	Santa Isabel, Col.	♂	65.5	59	10
“ “ “	“ “ “	♂	68	62	9.5
“ “ “	“ “ “	♂	69	62	10.5
Catamenia i. inornata,	Oroya, Peru	♀	67	57.5	9
Catamenia i. minor,	‘Gualea,’ Ec.	♀	65	56	9.5
“ “ “	Santa Isabel, Col.	♀	65	56.5	10

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[1] J. f. O., 1884, p. 294 (Bucaramanga, Col.).

(3774) **Catamenia homochroa** *Scl.*

Catamenia homochroa Scl., P. Z. S., 1858, p. 552 (Matos, Ecuador)..

Inhabits the Temperate Zone in all three ranges, ranging upward to the Paramo in the Western and Eastern Andes. Our specimens from the last-named range are native skins.

Paramillo, 14; Andes w. of Popayan, 2; Valle de las Pappas, 2; Laguneta, 1.

(3777*a*) **Catamenia analoides schistaceifrons** *Chapm.*

Catamenia analoides schistaceifrons Chapm., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 649 (La Mar, 8260 ft., Cundinamarca, Col.)

Char. subsp.— Similar to *C. a. analoides* (Lafr.) but smaller, the male with the forehead, lores and chin slaty or gray and without black, the throat and breast much paler, pale neutral gray rather than slate-gray; white area on the primaries at the end of the primary coverts wholly absent or barely suggested; margins of wing-coverts and inner margins of wing-quills grayer.

Found only at La Mar and Suba on the Bogotá Savanna, our two specimens being taken by native collectors.

(3782) **Tiaris olivacea pusilla** *Swains.*

Tiaris pusilla Swains., Phil. Mag. (N. S.) I, 1827, p. 438 (Mexico).

Phonipara pusilla Wyatt, Ibis, 1871, p. 328 (Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 507 (Retiro; Sta. Elena; Medellin).

Occurs in the fields and along the wayside in both Tropical and Subtropical Zones, but appears to be more common in the latter than in the former.

Our specimens all seem to be quite typical of the Mexican form.

Dabeiba, 1; La Frijolera, 1; Caldas, 2; Las Lomitas, 1; San Antonio, 8; Ricaurte, 2; Rio Frio, 1; Miraflores, 5; Sta. Elena, 1; Salento, 4; Barro Blanco, 1; Rio Toché, 1; San Agustin, 2; La Palma, 1; below Andalucia, 3000 and 5000 feet, 3; El Consuelo, 1; Subia, 1.

(3783) **Tiaris bicolor omissa** *Jard.*

Tiaris omissa Jard., Ann. N. H., XX, 1847, p. 332 (Tobago).

Eutheia bicolor Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ibagüe).

Phonipara bicolor Allen, Bull. A. M. N. H., XIII, 1900, p. 165 (Minca).

Found only in the Magdalena Valley. One of three males is fairly typical of *omissa*, the other two have less black below and thus show some approach toward *marchi;* one of these, taken alone, might indeed be referred to that form, but both have the posterior margin of the black breast less sharply defined than in *marchi.* Colombian records of *marchi* are possibly based on individual variants of this type.

Honda 1 ♂, 1 ♀; Chicoral 2 ♂♂.

3790. **Volatinia jacarini splendens** (*Vieill.*).

Fringilla splendens Vieill., Nouv. Dict. d'Hist. Nat., XII, 1817, p. 173 (Cayenne).

Volatinia jacarina Wyatt, Ibis, 1871, p. 328 (Ocaña; Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 507 (Medellin).

Volatinia splendens Robinson, Flying Trip, 1895, p. 101 (Barranquilla).

Abundant and generally distributed in favorable places in the Tropical Zone and following trails and clearings to the Subtropical Zone. We have no specimens from the Pacific coast north of Tumaco, except at Caldas and Dabeiba. Dabeiba, 2; Caldas, 2; San Antonio, 1; Barbacoas, 1; Tumaco, 1; Cali, 5; La Manuelita, 2; Miraflores, 1; Barro Blanco, 3; Chicoral, 1; Honda, 1; La Playa, 2; Quetame, 1.

(3796) **Pitylus grossus** (*Linn.*).

Loxia grossa Linn., Syst. Nat. I, 1766, p. 307 (Cayenne).

Pitylus grossus Cass., Proc. Acad. N. S. Phila., 1860, p. 140 (Falls Truando); Scl. & Salv., P. Z. S., 1879, p. 505 (Remedios; Neché); Hellm., *Ibid.*, 1911, p. 1121 (Sipi).

Of general distribution in the Tropical Zone, but we did not take it in the Cauca Valley.

Dabeiba, 1; Quibdó, 1; Baudo, 2; San José, 1; Cocal, 2; Barbacoas, 6; w. of Honda, 1.

(3803) **Saltator maximus** (*Müll.*).

Tanagra maximus P. L. S. Müller, Syst. Nat. Supple., 1776, p. 159 (Cayenne).

Saltator magnus Scl. & Salv., P. Z. S., 1879, p. 505 (Remedios; Neché; Medellin); Allen, Bull. A. M. N. H., XIII, 1900, p. 166 (Minca; Onaca; Cacagualito).

Saltator maximus Hellm., P. Z. S., 1911, p. 1121 (Noanamá; Nóvita).

A wide-ranging species of the humid Tropical Zone which, however, we have not taken in the Cauca Valley.

Pacific coast specimens average larger and somewhat darker, but on the whole our series shows remarkably little variation.

Noanamá, 2; San José, 3; Barbacoas, 6; La Frijolera, 4; Puerto Valdivia, 1; below Andalucia, 1; Buena Vista, 5; Villavicencio, 2; Florençia, 5.

(3804) **Saltator atripennis atripennis** *Scl.*

Saltator atripennis Scl., Proc. Acad. N. S. Phila., 1856, p. 261 (Popayan); Scl. & Salv., P. Z. S., 1879, p. 505 (Medellin); Hellm., *Ibid.*, 1911, p. 1120 (Pueblo Rico, 5200 ft.).

Common in the Subtropical Zone of the Western Andes; one specimen from the western slope of the Central Andes.

Popayan birds are topotypes and the others, except those from Ricaurte and Barbacoas, agree with them.

Five specimens from Ricaurte (alt. 4500 ft.), a locality near Barbacoas where the coastal forest ends, and one from as low even as Barbacoas, are fairly intermediate between this form and the next.

La Frijolera, 1; San Antonio, 10; west of Popayan, alt. 6000 ft., 4; Cocal, 1; Ricaurte, 5; Barbacoas, 1; Miraflores, 3; Salento, 1.

(3804*a*) **Saltator atripennis caniceps** *Chapm.*

Saltator atripennis caniceps Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 182 (Fusugasugá, Col.).

Char. subsp.— Similar to *S. a. atripennis* but crown largely gray instead of largely black; exposed portions of inner tertials wholly olive-green, throat and breast with no wash of buffy, under tail-coverts paler, bill averaging heavier and more inflated laterally.

Inhabits the Temperate Zone of the Eastern Andes and southward into Ecuador (Gualea). It is not surprising therefore to find that five specimens from Ricaurte (alt. 5000 ft.), a locality in southwestern Colombia on the Ecuadorian line, are intergrades. The bill in these Ricaurte birds agrees with that of *caniceps,* the color of crown more nearly resembles that of *atripennis* while the tertials are more like those of *caniceps.* The buffy throat-mark is barely evident in four specimens and absent in one, but the cinnamon-buff under tail-coverts are unquestionably those of *atripennis.*

The present case furnishes an exception to the rule that the affinities of west Ecuadorian forms are with those of the Cauca region rather than with those from the Bogotá region.

Fusugasugá, 1; Aguadita, 2; Anolaima, 4; Panama (above Pacho), 1; Muzo, 1.

(3807) **Saltator olivascens** *Cab.*

Saltator olivascens Cab., in Schomk. Reisen in Brit.-Guian., III, 1848, p. 676 (Guiana); Allen, Bull. A. M. N. H., XIII, 1900, p. 167 (Bonda; Santa Marta).

Found only in the arid coastal region of the Lower Magdalena and lower Atrato.

La Playa, 1; Sinu River, 1; Calamar, 1; Algodonal, 1.

(3809) **Saltator cærulescens azaræ** *d'Orb.*

Saltator azaræ D'ORB., Voy. Am. Merid. Ois., 1836, p. 287 (Moxos and Santa Cruz, Bolivia).
Saltator superciliaris Auct., nec SPIX; *cf.* HELLM., Abh. Akad. der Wiss., 1906, p. 678.

Inhabits the Tropical Zone at the eastern base of the Eastern Andes at least as far north as Villavicencio. Aside from being slightly smaller (♂, wing, 96 mm.) our specimens agree with others from Peru and Bolivia. Although three of our specimens come from the heart of the east 'Bogota' region, this species does not appear to have been before recorded from Colombia.

Florencia, 2; Villavicencio, 2; Buena Vista, 1.

(3819) **Saltator striatipectus striatipectus** *Lafr.*

Saltator striatipectus LAFR., Rev. Zool., 1847, p. 73 (Cali, Col.); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 166 (Bonda; Minca; Santa Marta).
Saltator albicollis SCL. & SALV., P. Z. S., 1879, p. 505 (Medellin; Remedios; Sta. Elena).

Abundant in the Tropical Zone of both Cauca and Magdalena Valleys, reaching to the lower borders of the Subtropical Zone, the arid basin at Caldas, and the east side of the lower Atrato Valley. The Cauca Valley birds are topotypical and birds from the other localities appear to agree with them.

Dabeiba, 4; Caldas, 3; San Antonio, 2; La Florida, 1; Cali, 1; Rio Frio, 2; Palmira, 4; below Miraflores, 6; near San Agustin, 4; La Candela, 2; below Andalucia, 4; Chicoral, 1; Rio Toché, 1; Honda, 7; Fusugasugá, 1.

(3822) **Spinus spinescens spinescens** (*Bonap.*).

Chrysomitris spinescens BONAP., Consp. Av., I, 1850, p. 517 (Bogotá).

An abundant bird in the Temperate Zone of the Eastern Andes occurring in great flocks on the Bogotá Savanna and descending less commonly to the upper portion of the Subtropical Zone. Old 'Bogotá' skins are more yellow above than freshly collected specimens. All of our examples have the tail yellow at the base, the principal character by which they are distinguished from *S. nigricauda* of the Central Andes.

Bogotá, 6; La Holanda, 2; La Porquera, 1; La Mar, 1; Chipaque, 1; El Roble, 1.

(3823*a*) **Spinus nigricauda** *Chapm.*

Spinus nigricauda Chapm., Bull. A. M. N. H., XXXI, 1912, p. 160 (Paramo of Santa Isabel, Cen. Andes, Col.).

Char. sp.— Most nearly resembling *Spinus spinescens capitaneus* Bangs, but with longer wings, darker back, no yellow at the base of the tail, less yellow in the wing, heavily streaked under tail-coverts, etc.

Since the discovery of this species by Allen and Miller in the Central Andes, Miller and Boyle have secured four typical specimens at the northern end of the Central Andes.

Paramillo, (12,500 ft.), 4; Santa Isabel (12,700 ft.), 2.

(3825) **Spinus xanthogaster** (*DuBus*).

Chrysomitris xanthogastra Du Bus, Bull. R. Acad. Belg., XXII, 1855, p. 152 (Ocaña, Col.); Wyatt, Ibis, 1871, p. 328 (Canuto; Cocuta); Scl. & Salv., P. Z. S., 1879, p. 508 (Sta. Elena).

San Antonio, 4; Sta. Elena, 2.

(3841) **Astragalinus psaltria columbianus** (*Lafr.*).

Carduelis columbianus Lafr., Rev. Zool., 1843, p. 292 (Columbia).

Chrysomitris columbiana Wyatt, Ibis, 1871, p. 328 (Ocaña); Scl. & Salv., P. Z. S., 1879, p. 508 (Concordia; Retiro; Sta. Elena; Medellin).

Astragalinus psaltria columbianus Allen, Bull. A. M. N. H., XIII, 1900, p. 165 (Bonda; Onaca; Minca).

Our specimens are chiefly from the Subtropical Zone in all three ranges, and arid or open portions of the Temperate Zone in the eastern range.

Ranges from the Tropical to the Temperate Zone. Specimens with black as well as black and white tails are included in our series of adult males from most of the localities mentioned, as follows:

Western Andes: Caldas, one, in molt, outer feathers only remaining but with as much white as in *croceus;* one, no white in outer feathers, second pair as in *croceus,* third pair with but little white on one side, almost none on the other. *Central Andes:* Miraflores, three, all with tail essentially as in *croceus;* Barro-Blanco, one, tail black; El Eden, one, outer pair of feathers, one as in *croceus,* one black; second pair both white, as in *croceus,* third pair black; Chicoral, one, two outer pairs of feathers with but little white; La Candela, one, same as last, one with little white in outer pair only; San Agustin, one, a little white in outer feather on one side, the same amount in second feather on the other side. *Eastern Andes:* Above Honda, one, tail wholly black; vicinity of Bogotá, ten, seven with tail wholly black, one with white along the shaft of the two outer feathers, one with outer feathers as in *croceus*, a much smaller amount on the next pair, one with two outer feathers with white quadrate patches on one side, the corresponding feathers on the other side black; Quetame, tail wholly black; Buena Vista, two, tail wholly black, one, small amount of white in outer pair, one, small amount of white in one of second pair; Andalucia, one, wholly black; one, two outer pairs as in *croceus*. In addition to the Colombian birds listed below we have one from Gualea, Ecuador, in which the three outer pairs of rectrices have as much white as in *croceus*. It thus appears that only five birds in our series of thirty-five males have the tail with white as in *croceus* (they are considerably paler below than Chiriqui specimens), seventeen have no white on the tail and fourteen are more or less intermediate and of these thirteen have the tail assymetrically marked with white. All the white-tailed (= "*croceus*") specimens are from the Western Andes and western slope of the Central Andes; all but one of the black-tailed specimens (= *columbianus*) are from the Eastern Andes or country at their base, while intermediates occur throughout practically the entire region represented by our specimens. It is evident that we have here a complicated case not to be accounted for by geographic or individual variation, while the results of hybridization could be rendered apparent along so long a "front" only by assuming that range extension in these forms has been from east to west and *vice versa*. Thus a black-tailed eastern form has longitudinally invaded the range of a white-tailed western form, which in turn has entered the home of the black-tailed form. Only this theory occurs to me as a possible explanation of this puzzling case, but more material is needed before we will be in a position to settle satisfactorily the status of these birds.

Caldas, 3; Miraflores, 4; San Antonio, 2; Cerro Munchique, 1; El Eden, 3; Rio Toché, 1; Chicoral, 1; near San Agustin, 1; La Palma, 1; La Candela, 3; below Andalucia (alt. 3000 ft.), 3; El Consuelo, above Honda (alt. 3300 ft.), 2; Fusugasugá, 1; Bogotá, 1; Quetame, 1; Buena Vista, 4; La Holanda, 5; La Herrera, 2; El Carmen, 2; Pacho, 1; Subia, 1; Tenasuca, 1; Puente Andalucia, 6.

(3842) **Sicalis flaveola** (*Linn.*).

Fringilla flaveola Linn., Syst. Nat., I, 1766, p. 321 (Surinam).

Sycalis columbiana Robinson, Flying Trip, 1895, p. 161 (Barranquilla).

Sycalis flaveola Allen, Bull. A. M. N. H., XIII, 1900, p. 165 (Bonda; Cienaga; Cacagualito; Santa Marta).

Inhabits the arid Coastal Zone of northern Colombia. I have no topotypes and no specimens of *Sicalis columbiana*, described from Puerto Cabello.

Sharpe, however, recognizes *columbiana* and refers Santa Marta specimens to *flaveola* and since the specimens listed below agree with a large series from Santa Marta, I accept Sharpe's determination.

Turbaco, 2; La Playa, 2; Calamar, 3; Boca de Chimi, 1.

(3850) **Sicalis arvensis minor** *Cab.*

Sycalis minor Cab., in Schomb. Reis. Guian, III, 1848, p. 679 (British Guiana).

One of the most abundant birds on the Bogotá Savanna where we saw it in large flocks; occurs also in the Magdalena Valley but is rare in the Cauca Valley.

Our specimens are more richly colored above than Lima specimens of *luteiventris*, and lack the white or whitish apical area on the inner vane of the outer rectrix. I have, however, no specimens of true *minor* for comparison.

Cali, 1; Chicoral, 1; Bogotá, 4; Subia, 2; Puente Andalucia, 1; El Carmen, 1; La Mar, 2.

(3853) **Spiza americana** (*Gmel.*).

Emberiza americana Gmel., Syst. Nat. I, 1789, p. 872 (New York).

Euspiza americana Cass., Proc. Acad. N. S. Phila., 1860, p. 140 (Turbo); Wyatt, Ibis, 1871, p. 328 (Ocaña).

Spiza americana Allen, Bull. A. M. N. H., XIII, 1900, p. 164 (Bonda; Santa Marta).

R. Salaqui, 1, Mch. 15; Calamar, Jan. 22, 1.

(3854*a*) **Ammodramus savannarum caucæ** *Chapm.*

Ammodramus savannarum caucæ Chapm., Bull. Am. Mus. Nat. Hist., XXXI, 1912, p. 161 (Cali, Col.).

Char. subsp.— Similar to *A. s. australis* but darker, black central areas to feathers larger, chestnut areas smaller and darker, edgings to feathers grayer, less buffy.

Known only from three specimens taken at Cali. In view of the somewhat restricted character of the avifauna of the Tropical Zone of the Cauca Valley it is somewhat surprising to find there two species of Sparrows of sedentary habits. The present species appears not to have been recorded elsewhere on the South American mainland, though a form of it (*A. s. caribæus* Hart.) has been described from the islands of Curaçao and Bonaire.

(3855*a*) **Myospiza manimbe columbiana** *Chapm.*

Myospiza manimbe columbiana Chapm., Bull. Am. Mus. Nat. Hist., XXXI, 1912, p. 162 (Cali, Col.).

Char. subsp.— Upperparts much darker and more broadly streaked than in *M. m. manimbe,* the crown and back of about the same color.

Apparently confined to the Tropical Zone. We have five specimens from Cali, and three from La Manuelita, in the Cauca Valley, one from near Honda and five from Chicoral, in the Magdalena Valley. The latter, as before remarked (*l. c.*), are paler than *columbiana* and more nearly resemble specimens from the middle Orinoco region.

Cali, 5; La Manuelita, 3; near Honda, 1; Chicoral, 5.

(3856) **Myospiza aurifrons** (*Spix*).

Tanagra aurifrons Spix, Av. Bras., II, 1825, p. 38, pl. i, fig. 2 (Fonteboa, Rio Solimoëns).

Of this Amazonian species, which appears not to have been before recorded from Colombia, we have six specimens from Florencia and five from La Morelia in the Caquetá region.

Florencia, 6; La Morelia, 5.

(3856*a*) **Myospiza cherriei** *Chapm.*

Myospiza cherriei Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 183 (Villavicencio, Col.).

Char. sp.— Similar to *Myospiza manimbe* but much paler, the plumage with no chestnut, the crown essentially like the back, the breast with no dusky band, the yellow of head more extensive, encircling the eye and basally crossing the forehead, outer primary shorter, equalling the seventh instead of the sixth (from without); outer tail-feathers shorter; bill more slender, the mandible plumbeous rather than brownish in color.

Known only from the llanos at the base of the Eastern Andes.

This species is intermediate between *Myospiza manimbe* (Licht.) and *M. aurifrons* (Spix) (= *peruviana* auct.), in fact, it materially closes the gap between these quite unlike forms. In the general coloration of the upperparts it more nearly resembles *manimbe,* but in its strongly graduated tail, white underparts, extent of yellow on the head, color and shape of the bill, it appears to be more nearly related to *aurifrons.* Its wing formula is intermediate in character, the outer primary being shorter than in *manimbe* and longer than in *aurifrons.*

Villavicencio, 3.

(3882) **Brachyspiza capensis peruviana** (*Less.*).

Pyrgita peruviana Less, Rev. Zool., 1839, p. 45 (Lima, Peru).

Zonotrichia pileata Wyatt, Ibis, 1871, p. 328 (Cachiri; Pamplona road; 7000–9000 ft.); Scl. & Salv., P. Z. S., 1879, p. 507 (Retiro; Envigado; Medellin).

Brachyspiza capensis peruviana Allen, Bull. A. M. N. H., XIII, 1900, p. 164 (Santa Marta).

This widely distributed and abundant wayside bird ranges from the upper borders of the arid Tropical Zone through arid or deforested areas in the Subtropical Zone and throughout the Temperate Zone. Probably it is most numerous in the last-named zone. The lowest elevation at which we have met it is Caldas (alt. 1800 ft.), the arid pocket on the west slope of the Western Andes. It is found all along the trail to Cali, in the Cauca Valley, and on the Central Andes to timberline. It was not observed in the Magdalena Valley at Honda, nor did we encounter it in ascending the western slope of the eastern range until we had reached an altitude of 5000 feet, a few miles east of Guaduas. From this point it was common upward to the Bogotá Savanna where it is one of the most characteristic species, and thence eastward over the pass (alt. 10700 ft.) on the trail to Villavicencio, and down this trail to the vicinity of Monteredondo (alt. 4600 ft.) where the arid Subtropical Zone meets the upper border of the humid Tropical Zone.

Eighty specimens from the region here outlined represent but one race, which comparison with eight Peruvian birds, including four topotypes from Lima, supports Mr. Ridgway's conclusion[1] that Colombian birds are most nearly related to the form from western Peru. Sixteen specimens from Costa Rica and Chiriqui (*B. c. costaricensis* (Allen) are darker and smaller than Peruvian birds and have more black on the throat, but the range of individual variation is so great that to recognize a northern form would make it difficult to name exactly specimens from most of the territory between Peru and Costa Rica, and I follow Ridgway (*l. c.*) in applying the name *peruviana* to the birds from the whole area.

Paramillo, 9; La Frijolera, 1; Caldas, 3; San Antonio, 8; Cali, 4; Popayan, 1; Cerro Munchique, 3; Crest of Range, 2; Ricaurte, 2; Salento, 3; Sta. Elena, 1; Laguneta, 1; Santa Iabel, 3; El Eden, 3; Rio Toché, 4; Miraflores, 3; La Sierra, 1; Valle de las Pappas, 1; near San Agustin, 5; below Andalucia (3000 ft.) 2; La Holanda, 4; El Roble, 1; El Piñon, 1; Bogotá, 6; Chipaque, 3; Quetame, 2.

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[1] Bull. 50, U. S. N. M., I, p. 348.

(3892) **Arremonops conirostris conirostris** (*Bonap.*).

Arremon conirostris Bonap., Consp. Av., I, 1850, p. 488 (Brazil "Bogotá").

Embernagra conirostris Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ambalema).

Arremonops venezuelensis Ridgw., Auk, XV, 1898, p. 228 (Puerto Cabello, Ven.); Allen, Bull. A. M. N. H., XIII, 1900, p. 163 (Santa Marta).

Arremonops conirostris canens Bangs, Proc. Biol. Soc. Wash., XII, 1898, p. 140 (Santa Marta).

Arremonops caneus Allen, Bull. A. M. N. H., XIII, 1900, p. 164 (Santa Marta).

Of general distribution in the Tropical Zone but apparently wanting in the Cauca Valley. On the Pacific coast *A. c. chrysoma* reaches southwest Colombia but no representative of the group has been recorded from between Barbacoas and Panama.

Specimens from the western base of the Eastern Andes (vicinity of Honda) appear to be inseparable from those from near the eastern base of the range (Buena Vista), though on both sides the birds are restricted to the Tropical Zone. Accepting Hellmayr's designation of the type-locality for this species as "Bogotá"[1] these birds are typical of *conirostris*, and I place with them Santa Marta specimens (*A. canens* Bangs) though they average slightly browner above. Six specimens from Bermudez, Venezuela, average somewhat smaller but show no difference in color from the Honda and Buena Vista birds. If they properly represent *venezuelensis* (described from Puerto Cabello) I am unable to appreciate its characters. Todd (Ann. Carnegie Mus. 1912, p. 199) and Hellmayr (*l. c.*) consider *canens* to be synonymous with *venezuelensis*, an opinion with which I agree though my material shows *canens* to differ somewhat from *conirostris*, while *venezuelensis* appears to be identical with it. Specimens from Chicoral, on the west side of the Magdalena Valley, and 1200 feet above Honda, are slightly larger than Honda specimens. I think that we are warranted, however, in accepting either Honda or Buena Vista birds as topotypical. The affinities of *richmondi*, the Panama and Central American bird, appear to be with *chrysoma* rather than with *conirostris*, which differs from both the preceding in having gray in the back and less yellow in the wing-coverts.

Puerto Berrio, 2; Malena, 5; Nare, 1; Honda, 6; Chicoral, 4; Buena Vista, 7; Villavicencio, 3.

Measurements.

		Wing	Tail
Honda,	5 males	73	66 mm.
"	1 female	70	63 mm.
Buena Vista,	7 males	73	66 mm.
" "	2 females	69	64 mm.
Santa Marta,[2]	1 male	75	66 mm.
Bermudez, Venezuela,	3 males,	73	66 mm.

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[1] Archiv. für Naturg., 1912, p. 69.

[2] 3 more specimens not sexed.

(3892*a*) **Arremonops conirostris inexpectata** *Chapm.*

Arremonops conirostris inexpectata Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 184 (Andalucia, w. slope, Cen. Andes, 3000 ft.).

Char. subsp.— Similar to *A. c. conirostris* but wing shorter; in general color of the body resembling *conirostris*, but breast paler and supraloral stripe whiter, wings and tail more nearly like those of *A. c. chrysoma*, the shoulder bright lemon-chrome, the wing-quills, *including the outer primary*, margined externally with yellowish increasing in brightness from within outwardly. Average, three males, wing, 69; tail, 66; one female, wing, 65; tail, 63 mm.

In view of the stability shown by *Arremonops conirostris conirostris* through a wide area, the appearance of this form so near the type-locality of that race is surprising and inexplicable. Specimens of *conirostris* from Honda, at the western base of the Eastern Andes, agree minutely in color and size with others from the eastern base of the same range, though these areas are separated by three life-zones making actual contact impossible.

Nevertheless, within the same river valley, and in the same faunal area, this well-marked race, the characters of which are supported by eight adults and five juvenal specimens, occurs. In no other instance have we found birds common to both Honda and the region west of and below Andalucia, to differ geographically from one another, and one is led to believe that possibly *inexpectata* is not strictly a geographical variant of *conirostris*, or at any rate has had its origin from some other source than the Honda region. The bird's resemblance to *chrysoma* of western Ecuador should be considered in this connection, and the apparent isolation of the latter form is also of significance. Possibly like some other birds from the Upper Magdalena at Andalucia, it has crossed from the eastern to the western side of the Andes at this point. Miller, however, sends no specimens of *Arremonops* from the Caquetá region.

Andalucia (w. slope, 3000 ft.) 13.

(3893) **Arremonops conirostris chrysoma** (*Scl.*).

Embernagra chrysoma Scl., P. Z. S., 1860, p. 275 (Babahoyo, Ecuador).

The range of this race, heretofore known only from western Ecuador, is now extended to southwestern Colombia through Richardson's capture of six specimens. No form of *Arremonops* has been recorded from the Pacific coast of Colombia north of Tumaco, but the species appears again in Panama and Central America as *A. chrysoma richmondi*. This form differs from *chrysoma* mainly in having the back and tail with a brownish tinge, the wings externally less yellowish. It agrees with *chrysoma*, and thereby differs from true *conirostris*, in having no gray on the back and in having the lesser wing-coverts lemon-chrome, and, evidently, is more closely related to *chrysoma* than to *conirostris*.

		Wing	Tail
S. W. Colombia,	2 males	77	70 mm.
Boquete, Chiriqui,	2 males	78	70 mm.
Boruca, Costa Rica,	2 males	74	69 mm.
Matagalpa, Nic.,		76	67 mm.
S. W. Colombia,	3 females	74	69 mm.
Panama R. R.,	2 "	72	67 mm.
Matagalpa, Nic.,		73	65 mm.

Tumaco, 2; Barbacoas, 2; Buena Vista, 2.

(3899) **Emberizoides sphenurus** (*Vieill.*).

Passerina sphenura Vieill., Nouv. Dict. d'Hist. Nat., XXV, 1817, p. 25 (Cayenne).

Emberizoides macrurus Scl. & Salv., P. Z. S., 1879, p. 507 (Antioquia; Medellin).

Emberizoides macrourus Allen, Bull. A. M. N. H., XIII, 1900, p. 163 (Santa Marta; San Miguel; Macotama; Palomina).

A wide-ranging species of the Tropical Zone, of which we have taken only three specimens, two at La Manuelita, in the Cauca Valley, and one at Quetame at the upper border of the Amazonian fauna in the Eastern Andes.

La Manuelita, 2; Quetame, 1.

(3910*a*) **Pseudochloris citrina antioquiæ** subsp. nov.

Char. subsp.— Similar to *P. c. citrina* but upperparts very much darker, the shaft-streaks of the back blacker their margins hair-brown rather than buffy brown; remiges and rectrices black rather than fuscous; female with the crown largely hair-brown instead of Saccardo's umber. Males differ from the type (male) of *P. browni* in having " the chest slightly duller; the belly brighter and clearer yellow; the yellow of forehead less diffused and not extending as far backward toward the nape; the nape darker; the back much darker, the rectrices and remiges of a deeper, richer color." (T. Barbour *in. litt.*).

Type.— 134,194 Am. Mus. Nat. Hist. ♂ ad. Barro Blanco (7200 ft.), Antioquia, Colombia.

This race is known only from the type-locality whence we have three adult males and two adult females. All are much alike in the color of the upperparts, wings, and tail, indicating that the dark color of these parts is characteristic. Of *P. citrina citrina* I have only one female, which, however, is in fresh plumage and exactly comparable with one of the Barro Blanco specimens.

Of *P. browni* I have only one immature female (?), but comparison with the type and three female topotypes of the species has been made for me by Mr. Thomas Barbour.

Our single specimen of *browni* (Onaca, Santa Marta) in the general color of the upperparts, wings and tail is much nearer our one specimen of *citrina* than either is to *antioquiæ.* The specimen of *citrina* is from Mt. Roraima, whence Sharpe (Cat. Bds. B. M. XII, p. 779) records additional specimens.

Brabourne & Chubb, however, (Bds. S. A., I, p. 381) include Guiana in the range of *browni* and restrict *citrina* to Brazil. I am not aware on what ground this view is based and in the absence of Brazilian specimens of *citrina* and a larger number of specimens from Guiana I am unable to confirm or disprove it.

Barro Blanco, 5.

(3925*a*) **Phrygilus unicolor grandis** *Chapm.*

Phrygilus unicolor grandis Chapm., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 651 (Santa Isabel, 12500 ft., Cen. Andes, Colombia).

Char. subsp.— Larger and with a longer, heavier bill than any known race of the species; male paler, particularly on the underparts, which have a whitish cast, than the male of *P. u. unicolor*, which is nearly the same color below as above; female with the auricular region usually grayish or tinted with buffy instead of dark olive-buff as in *P. u. geospizopsis;* not certainly distinguishable in color from the much smaller *P. u. nivarius* (Bangs).

Inhabits the Paramo zone of the Central Andes of Colombia southward at least to Chimborazo, Ecuador.

Santa Isabel, 8 ♂ ads., 3 ♀ ads., 2 ♀ im.

(3926*b*) **Phrygilus unicolor geospizopsis** (*Bonap.*).

Passerculus geospizopsis Bonap., Compt. Rend., XXXVII, 1853, p. 291 (Colombia = 'Bogota' *cf.* Sclater, P. Z. S., 1855, p. 160).

Phrygilus unicolor Wyatt, Ibis, 1871, p. 328 (Vetas; 10,000–11,000 ft.).

Char. subsp.— Distinguished from *P. u. grandis* by its smaller size, from *P. u. nivarius* by its larger size; from both *grandis* and *unicolor* by its olive-buff, instead of grayish or buffy auricular region and by the suffusion of olive-buff on the chin and throat, in the female.

Thanks to the kind offices of Brother Apolinar Maria, I am in possession of nine topotypical specimens of this currently unrecognized race, from the Paramo of Choachi near Bogotá. Of six adult females taken in October and November, and in partly worn plumage, all but one have the auricular region and throat markedly buffy-olive, a character which appears to distinguish this species. At any rate, it is not present in other Colombian specimens, though it is shown by some from Chimborazo. Should it prove to be individual or seasonal this form would differ from other northern forms of this group by its size alone.

Paramo of Choachi, 3 ♂ ads.; 6 ♀ ads.

(3935) **Spodiornis jardini** *Scl.*

Spodiornis jardinii Scl., P. Z. S., 1866, p. 323 (Ecuador).

An immature male taken at Almaguer (alt. 10,300 ft.) in the Central Andes south of Popayan, is our only specimen. This species has been found in Bogotá collections. Hellmayr (Nov. Zool. 1906, p. 308) refers to this genus "*Haplospiza*" *uniformis* Scl. & Salv. of Central America and South Mexico.

Almaguer, 1.

(3952) **Paroaria gularis** (*Linn.*).

Tanagra gularis Linn., Syst. Nat., I, 1766, p. 316 (Guiana).

Found by us only in the Tropical Zone in Amazonian Colombia, where its capture by Miller adds it to the known fauna of the country. Our specimens appear to be typical.

La Morelia, 6.

(3963) **Arremon aurantiirostris erythrorhynchus** *Scl.*

Arremon erythrorhynchus Scl., P. Z. S., 1855, p. 83, pl. xxxix (Bogotá).

Arremon spectabilis Scl. & Salv., P. Z. S., 1879, p. 505 (Remedios); Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Honda).

We secured no specimens on the eastern slope of the Eastern Andes, and I am therefore unable to say how birds from that region agree with *A. a. spectabilis* from eastern Ecuador. Five specimens from the Magdalena Valley and one from the lower Cauca, however, evidently represent the bird currently known as *erythrorhynchus*. The Puerto Valdivia bird is the darkest of the four and consequently approaches *A. a. occidentalis*. In this race the chin is either wholly without or with but a trace of black.

Chicoral, 3; w. of Honda, 2; Puerto Valdivia, 1.

(3964) **Arremon aurantiirostris occidentalis** *Hellm.*

Arremon aurantiirostris occidentalis Hellm., P. Z. S., 1911, p. 1118 (Juntas, Rio Tamaná (type), and Condoto).

Occupies the Tropical Zone of the Pacific littoral but in places reaches the Subtropical Zone.

Munchique birds are decidedly larger than those from San José, which may be considered essentially topotypical.

Measurements.

	Wing	Tail
San José, ♂	69	65
Munchique, ♂	76	60
San José, ♀	66	53
Munchique, ♀	69	58

Hellmayr (*l. c.*) has clearly characterized the races of this group. I agree with him that intergradation between *aurantiirostris* and *occidentalis* is wholly probable. Indeed, an excellent series from eastern Panama shows an unmistakable approach toward *occidentalis.*

Dabeiba, 4; Alto Bonito, 4; Nóvita Trail, 1600 ft., 1; Buenaventura, 1; San José, 4; Munchique, 6000 ft., 2; Cocal, 4000 ft., 1; Barbacoas, 2; Buenavista, 1200 ft., 1.

(3967) **Arremon axillaris** *Scl.*

Arremon axillaris Scl., P. Z. S., 1854, p. 97 (Bogotá).

Villavicencio, 2.

(3971) **Lysurus castaneiceps** (*Scl.*).

Buarremon castaneiceps Scl., P. Z. S., 1859, p. 441 (R. Napo, Ecuador); Scl. & Salv., *Ibid.*, 1879, p. 505 (Frontino).

Taken only in the Subtropical Zone of the Western Andes.

Nóvita Trail (6000 ft.), 2: (3500 ft.), 1; Cocal, 1; Gallera, 2.

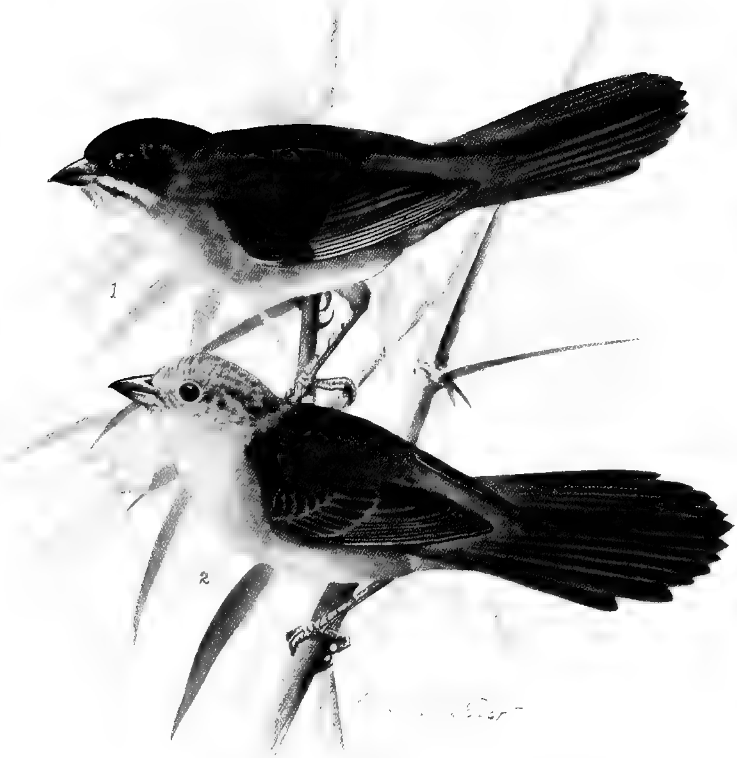
(3971*a*) **Atlapetes flaviceps** *Chapm.* (Plate XL.)

Atlapetes flaviceps Chapm., Bull. A. M. N. H., XXXI, 1912, p. 162 (Rio Toché, 6800 ft., Cen. Andes, Col.).

Char. sp.— An apparently very distinct species not closely related to any described form of the genus; head and underparts yellow, back, wings, and tail olive-green.

Known only from two specimens taken at the type-locality.

Rio Toché, 2.



BLACK-HEADED FINCH. *Atlapetes fusco-olivaceus* (Chapm.)

YELLOW-HEADED FINCH. *Atlapetes flaviceps* (Chapm.)

(About one-half natural size)

(3971*b*) **Atlapetes fusco-olivaceus** *Chapm.* (Plate XL.)

Atlapetes fusco-olivaceus Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 185 (San Agustin, Col.).

Char. sp.— In the extreme graduation of the tail and dark olive-green color of the back resembling *Atlapetes flaviceps* Chapm., but differing from that species in being still darker above (approaching in this respect *A. crassus* Bangs).

This distinct species is known only from the region at the head of the Magdalena.

San Agustin, 3; La Palma, 2.

(3973) **Atlapetes gutturalis gutturalis** (*Lafr.*).

Arremon gutturalis Lafr., Rev. Zool., 1843, p. 98 (Colombia).

Buarremon gutturalis Scl. & Salv., P. Z. S., 1897, p. 504 (Medellin; Remedios).

A common bird throughout the Subtropical Zone of all three ranges. Specimens from Fusugasugá may doubtless be considered topotypical of this form and with them the remaining birds of the series agree in color but average somewhat larger.

Peque, 1; La Frijolera, 1; Las Lomitas, 1; San Antonio, 7; Cerro Munchique, 4; Salento, 1; Rio Toché, 1; El Eden, 1; Miraflores, 1; La Sierra, 2; La Candela, 3; La Palma, 2; Andalucia, 4; Fusugasugá, 6.

(3976) **Atlapetes latinuchus latinuchus** (*Du Bus*).

Buarremon latinuchus DuBus, Bull. Acad. Brux., XXII, 1855, p. 154 ("Colombie et du Perou" = northeast Peru, *cf.* Berlepsch, Int. Orn. Cong., 1910, p. 1097).

Specimens from the Subtropical Zone in the Western Andes agree with a series from Loja, Ecuador and introduce this race to the recorded Colombian avifauna.

Cerro Munchique, 11.

(3979) **Atlapetes latinuchus elæoprorus** (*Scl. & Salv.*).

Buarremon elæoprorus Scl. & Salv., P. Z. S., 1879, p. 504 (Sta. Elena).

Two topotypes collected by Miller & Boyle show this bird to be a closely related form of *A. l. latinuchus*. Both are males; one in fresh plumage shows the olivaceous tinge which distinguishes this race from *latinuchus;* the other taken the same day (Nov. 19), is in worn plumage, the olivaceous suffusion of the upperparts has largely disappeared and the specimen can almost be matched by examples of *latinuchus*.

Sta. Elena, 2.

(3984) **Atlapetes albifrenatus** (*Boiss.*).

Tanagra albo-frenatus Boiss., Rev. Zool., 1840, p. 68 (Bogotá).
Buarremon albifrenatus Wyatt, Ibis, 1871, p. 327 (Alto, etc., 5000–7000 ft.).

Aguadita, 3; El Roble, 2; Anolaima, 3.

(3990) **Atlapetes schistaceus** (*Boiss.*).

Tanagra schistaceus Boiss., Rev. Zool., 1840, p. 69 (Bogotá).

A common species in the Temperate Zone of all three ranges.

I find no racial variation, but specimens from the Western and Central Andes average slightly larger than those from the Eastern.

Paramillo, 2; Andes west of Popayan (alt. 10,340 ft.) 18; Valle de las Pappas, 2; Almaguer, 1; Laguneta, 12.

(3993) **Atlapetes pallidinuchus pallidinuchus** (*Boiss.*).

Tanagra pallidinucha Boiss., Rev. Zool., 1840, p. 68 (Bogotá).
Buarremon pallidinuchus Wyatt, Ibis, 1871, p. 327 (Vetas).

Met with only in the Temperate Zone of the Eastern Andes, at El Piñon where it was common. In the Central Andes it is replaced by the nearly allied *A. p. papallactæ* Hellm.

El Piñon, 3; Chipaque, 1; Choachi, 2; La Pradera, 1; La Mar, 1; Palo Hueco, 1; Subia, 1; Anolaima, 1.

(3993*a*) **Atlapetes pallidinuchus papallactæ** *Hellm.*

Atlapetes pallidinucha papallactæ Hellm., Verhandl. Ornith. Gesellschaft in Bayern, Band XI, Heft 4, 1913, p. 318.

Atlapetes pallidinuchus obscurior Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 186 (Santa Isabel, Cen. Andes).

Inhabits the Temperate Zone of the Central Andes and southward into Ecuador. I have seen no Ecuador specimens, but the form from Papallacta, eastern Ecuador, recently separated by Hellmayr (whose descriptions did not reach me until after my paper describing the bird as *A. p. obscurior* was published) is doubtless the same as the Colombian bird.

Almaguer, 4; Laguneta, 2; Santa Isabel, 7.

(3994) **Atlapetes crassus** *Bangs.*

Atlapetes crassus Bangs, Proc. Biol. Soc. Wash., XXI, 1908, p. 161 (San Antonio, Col.).

Known only from the Western Andes where it appears to inhabit the Subtropical Zone, though one of our specimens is from the Tropical Zone. It is an interesting comment on the results attending collecting in the tropics, and particularly humid subtropics, that in spite of the amount of work done by us at the type-locality of this species none of our specimens of it was taken at that point.

Ricaurte, 4; Buenavista, Nariño, 1.

(3997) **Atlapetes semirufus** (*Boiss.*).

Tanagra semirufus Boiss., Rev. Zool., 1840, p. 69 (Bogotá).

A Temperate Zone species of the Eastern Andes, which ranges down into the arid subtropics. Not uncommon along the trail between Chipaque and Quetame.

Choachi, 7; Quetame, 1.

(4003) **Buarremon brunneinuchus** (*Lafr.*).

Embernagra brunnei-nucha Lafr., Rev. Zool., 1839, p. 97 (Mexico).

Buarremon brunneinuchus Scl. & Salv., P. Z. S., 1879, p. 504 (Concordia; Medellin; Sta. Elena); Hellm., *Ibid.*, 1911, p. 1117 (Pueblo Rico).

A common, wide-ranging bird of the Subtropical Zone which appears to show no geographical variation.

Las Lomitas, 2; San Antonio, 11; Gallera, 2; Cerro Munchique, 5; La Florida, 4; Ricaurte, 4; Miraflores, 6; Salento, 10; Sta. Elena, 3; El Eden, 3; La Candela, 3; La Sierra, 1; Andalucia, 4; Fusugasugá, 3; Buena Vista, 3.

(4011) **Buarremon assimilis** (*Boiss.*).

Tanagra assimilis Boiss., Rev. Zool., 1840, p. 67 (Bogotá).

Buarremon assimilis Scl. & Salv., P. Z. S., 1879, p. 504 (Medellin; Sta. Elena); Allen, Bull. A. M. N. H., XIII, 1900, p. 167 (Bonda).

Common in the Temperate Zone of all three ranges.

Birds from the Western and Central ranges agree in color and size with topotypical specimens from the Bogotá region.

West of Popayan, 11; Laguneta, 8; Santa Isabel, 1; Almaguer, 1; El Piñon, 2; Chipaque, 2.

(4012) **Buarremon atricapillus** *Lawr.*

Buarremon atricapillus Lawr., Ann. Lyc. Nat. Hist. N. Y., X, 1874, p. 396 (Bogotá).

Two females taken by Miller and Boyle at La Frijolera, on the lower border of the Subtropical Zone on the eastern slope of the Western Andes, and an unsexed specimen from the Central Andes west of Honda, agree with the type (a 'Bogotá' skin) of this rare bird but have the back of the crown sharply defined from the greenish back, whereas in the type the black extends on to the foreback.

La Frijolera, 2; w. of Honda, 1.

Family CŒREBIDÆ. Honey-Creepers and Guit-guits.

(4018) **Cœreba luteola luteola** (*Cab.*).

Certhiola luteola Cab., Mus. Hein., I, 1850, p. 96 (Puerto Cabello, Ven.; Carthagena, Col.); Cass., Proc. Acad. N. S. Phila., 1860, p. 194 (Turbo; Carthagena).

Cœreba luteola Stone, Proc. Acad. N. S. Phila., 1899, p. 313 (Carthagena); Allen, Bull. A. M. N. H., XIII. 1900, p. 173 (Cacagualito; Cienaga; Santa Marta).

Doubtless restricted to the arid coastal zone of northern Colombia.

La Playa, 4.

(4020) **Cœreba mexicana columbiana** (*Cab.*).

Certhiola columbiana Cab., J. f. O., 1865, p. 412 (Bogotá).

Certhiola mexicana Scl. & Salv., P. Z. S., 1879, p. 497 (Remedios; Medellin).

Cœreba chloropyga mexicana Hellm., P. Z. S., 1911, p. 1098 (Pueblo Rico, 5200 ft.)

Evidently occupies all of the Tropical Zone except the Cauca Valley and the Caribbean coast region. It has not been found on the Pacific coast north of Tumaco, all other records from west of the Western Andes being from the slopes of that range. Specimens from eastern Panama agree with *mexicana* in size but are intermediate in color. Specimens from Dabeiba agree with *columbiana* in color but are intermediate in size.

Salvadori and Festa (Bull. Mus. Tor. XV, 1899, p. 13) refer birds from western Ecuador to *columbiana* and describe the bird from southeastern Ecuador (Zamora, Gualquiza) as *Certhiola intermedia.* Lowe (Ibis, 1912, p. 502) refers all Ecuador specimens to *intermedia,* including skins from Guaquiza, Zamora, Esmeraldas, etc.

I have but one specimen from Zamora. It is matched by others from Zaruma and Duran, Prov. Guayas; while specimens from Esmeraldas in the humid coast region of northwestern Ecuador, and from southwestern Colombia, are nearer *columbiana*. They are smaller than specimens from the Bogotá region, and in this respect agree with Dabeiba birds, and may have the flanks a trifle more olivaceous and the underparts a shade deeper, but above they match true *columbianus* exactly.

Dabeiba, 6; Alto Bonito, 1; Peque, 2; Tumaco, 2; Buena Vista, 1; Ricaurte, 1; Honda, 4; Chicoral, 1; La Candela, 1; near San Agustin, 3; Andalucia, 2; El Alto de la Paz, 2; Buena Vista, 3; Villavicencio, 2.

(4020*a*) **Cœreba mexicana caucæ** *Chapm.*

Cœreba mexicana caucæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 186 (Cali, Colombia).

Char. subsp.— Similar to *Cœreba mexicana columbiana* (Cab.) but slightly smaller, the superciliaries mixed with grayish, sides of the throat, and sometimes its center, finely barred with grayish. Five males: Wing, 56.5; tail, 33.5; five females, wing, 53; tail, 32 mm.

This unexpected, but apparently quite distinct form is based on eleven adults from the Cauca Valley and adjoining slopes of the Western and Central Andes. The unusual characters in adults of this group, of a grayish superciliary line and barred sides of the throat, are present in all our specimens. At first glance these markings suggest immaturity, but the birds showing them are unquestionably fully adult.

Cali, 7; Las Lomitas, 2; e. of Palmira, 1; San Antonio, 1; Rio Frio, 1.

(4027*a*) **Diglossa sittoides similis** (*Lafr.*).

D[iglossa] similis Lafr., Rev. Zool., 1846, 318 ('Bogotá).

Diglossa sittoides, Scl. & Salv., P. Z. S., 1879, p. 496 (Retiro; Concordia).

Diglossa sittoides similis Allen, Bull. A. M. N. H., XIII, 1900, p. 174 (San Miguel; San Sebastian; El Mamon).

Not uncommon in the Subtropical Zone of all three Ranges. Comparison of eight males from Colombia and two from Merida, Venezuela, with two from Aplobamba, Bolivia, which may be considered as typical of true *sittoides*, supports the characters attributed by Lafresnaye to the 'Bogotá' bird. The northern form is smaller with an actually stouter bill, and has the sides and front of the head noticeably darker, the underparts of a more cinnamon less ochraceous shade than in the Bolivian race. Specimens from 'Ambato' and 'Quito,' Ecuador, resemble the Bolivian form in color but are nearer the Colombian in size.

Uncirostrum d'orbignyi Boiss (Rev. Zool., 1840, p. 5) synonymized by Sclater (Cat. B. M. XI, 4) with *Diglossa sittoides* auct. (= *D. s. similis*) is evidently too large (length 120, bill, 8 mm.) to be referred to that species.

San Antonio, 4; Cerro Munchique, 1; Miraflores, 1; Salento, 1; Rio Toché, 1; San Agustin, 1; La Candela, 1; La Holanda, 3; Quetame, 2.

Measurements of Males.

	Wing	Tail	Tarsus
Bolivia, Aplobamba	62	47	17
" "	63	47	18
Ecuador, Quito	57	45	15
Colombia, San Antonio	53	43	17
" " "	54	44	16.5
" " "	54	45	16
" Salento	55.5	43	15.5
" Quetame (Bogotá)	54.5	42	16
Venezuela, Merida	57	45	16
	55	43	17

(4029) **Diglossa gloriosissima** *Chapm.*

Diglossa gloriosissima Chapm., Bull. A. M. N. H., XXXI, 1912, p. 165 (Andes w. of Popayan, 10,340 ft.).

Char. sp.— Most closely related to *Diglossa gloriosa* Scl. & Salv., but much larger, black areas less sooty, lesser wing-coverts and rump bluer, rufous of underparts brighter, thighs black, no superciliary line.

Known only from the Temperate Zone of the Western Andes. Since its discovery by Richardson and Miller on the Andes west of Popayan, Miller and Boyle secured a beautifully prepared series of this interesting species at the northern end of the same range. Though quite distinct this form is obviously a representative of *D. gloriosa* of the Venezuelan Andes. It is surprising therefore that neither species has been recorded from the region between Merida and the Andes west of Popayan.

Andes w. of Popayan (10,340 ft.), 10; Paramillo (12,500 ft.), 13.

(4030) **Diglossa brunneiventris** *Lafr.*

Diglossa brunneiventris Lafr., Rev. Zool., 1846, p. 318 (Peru); Scl. & Salv., P. Z. S., 1879, p. 496 (Sta. Elena).

Miller and Boyle secured a large series of this species in the Temperate Zone at the northern end of the Western Andes. It appears to have been hitherto known in Colombia only from Salmon's records for Sta. Elena and

"Medellin." Doubtless the last-named locality may be understood to indicate high mountains near Medellin.

Our specimens agree minutely in color with four males from Cuzco, Peru, but are smaller.

Cuzco, 3 males average, wing, 68–73; tail, 59–62; culmen, 11–12 mm.

Paramillo, 5 males average, wing, 64–67.5; tail, 57–60; culmen, 11–12 mm.

Paramillo (12,500 ft.) 19.

(4036) **Diglossa lafresnayei** (*Boiss.*).

Uncirostrum lafresnayei Boiss., Rev. Zool., 1840, p. 4 (Bogotá).

Not uncommon in the Temperate Zone of the Central and Eastern Andes.

Almaguer, 2; Laguneta, 1; Santa Isabel, 1; Chipaque, 4; Choachi, 3.

(4037) **Diglossa humeralis** (*Fraser*).

Agrilorhinus humeralis Fraser, P. Z. S., 1840, p. 22 (Bogotá).

Diglossa humeralis Wyatt, Ibis, 1871, p. 324 (high regions near Bucaramanga; 9000 ft.).

Found by us only in the Temperate Zone of the Eastern Andes. At Chipaque both this species and *D. lafresnayei* were common, their occurrence together affording an interesting illustration of how two species, which differ from each other, less than do many subspecies, may be found at the same place.

Chipaque, 4; Subia, 3; La Mar, 1; Palo Hueco, 1; La Pradera, 3.

(4038) **Diglossa aterrima** (*Lafr.*).

Diglossa aterrima Lafr., Rev. Zool., 1846, p. 319 (Pasto, Col.); Allen, Bull. A. M. N. H., XIII, 1900, p. 174 (Sierra Nevada de Santa Marta).

Foung only in the Temperate Zone of the Central and Eastern Andes.

Almaguer, 2; Laguneta, 2; Santa Isabel, 1; Chipaque, 1.

(4040) **Diglossa albilateralis** *Lafr.*

Diglossa albi-latera Lafr., Rev. Zool., 1843, p. 99 (Colombia); Wyatt, Ibis, 1871, p. 324 (Herradura; Canuto); Scl. & Salv., P. Z. S., 1879, p. 496 (Retiro; Medellin; Sta. Elena); Allen, Bull. A. M. N. H., XIII, 1900, p. 174 (El Libano; Las Nubes).

Common in the higher parts of the Subtropical Zone of all three ranges, less frequent in the Temperate Zone.

Paramillo Trail (9000 ft.), 1; San Antonio, 1; Cerro Munchique, 5; Gallera, 1; Andes w. of Popayan (10,340 ft.), 1; Almaguer, 4; Miraflores, 1; Salento, 1; Laguneta, 1; Sta. Elena, 4; Barro Blanco, 2; Rio Toché, 4; El Eden, 4; Aguadita, 5; El Roble, 9; El Piñon, 3; Buena Vista, 1.

(4041) **Diglossa personata** (*Fraser*).

Agrilorhinus personatus Fraser, P. Z. S., 1840, p. 23 (Bogotá).
Diglossa personata Scl. & Salv., P. Z. S., 1879, p. 496 (Retiro; Sta. Elena).

Common in the Temperate and upper part of the Subtropical Zones, but rare below 8000 feet. There is much range in the intensity of color due to individual, not sexual, variation. Western Colombia birds may average slightly darker but do not appreciably differ from topotypical (Bogotá) specimens.

San Antonio, 2; Cerro Munchique, 14; Andes, west of Popayan, 7; Laguneta, 8; Santa Elena, 12; Barro Blanco, 2; Rio Toché, 1; El Eden, 2; Santa Isabel, 2; Almaguer, 7; Aguadita, 1; El Roble, 7; El Piñon, 2; Subia, 4.

(4043) **Diglossa cryptorhis** *Chapm.*

Diglossa cryptorhis Chapm., Bull. A. M. N. H., XXXI, 1912, p. 164 (Gallera, Col.).

Char. sp. — Most closely related to *Diglossa indigotica* Scl. of Ecuador, but nostrils more concealed, plumage of a different texture, firmer, more glossy and of a brighter color; tail shorter.

An apparently rare species of the Subtropical Zone of the Western Andes.

Gallera, 1; Nóvita Trail (7200 ft.), 1.

(4045) **Diglossopis cærulescens cærulescens** *Scl.*

Diglossa cœrulescens Scl., Ann. & Mag. Nat. Hist., 1856 (2), p. 467 (Caracas, Venezuela); Wyatt, Ibis, 1871, p. 324 (Portreras; between Ocaña and Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 496 (Sta. Elena).

Diglossopis cœrulescens cœrulescens Hellm., P. Z. S., 1911, p. 1093 (Tatamá Mt., 2794 ft.).

This species has much the same zonal distribution as *Diglossa personata* but appears to be less common. Our seven Colombian specimens agree with five from Merida, Venezuela, and show no approach toward *D. c. pallida* of Peru.

Nóvita Trail (7200 ft.), 1; Cerro Munchique, 1; Andes, west of Popayan, 2; Almaguer, 1; El Eden, 1; El Piñon, 2.

(4048) **Conirostrum sitticolor** *Lafr.*

Conirostrum sitticolor Lafr., Rev. Zool., 1840, p. 102 (Bogotá).

Inhabits the Temperate Zone of all three ranges.

Andes west of Popayan (alt. 10340 ft.), 1; Laguneta, 7; Santa Isabel, 2; Almaguer, 3; Valle de las Pappas, 2; El Piñon, 3; Chipaque, 1.

(4051) **Conirostrum rufum** *Lafr.*

Conirostrum rufum Lafr., Mag. de Zool., 1843, p. 35 (Bogotá); Wyatt, Ibis, 1871, p. 324 (above Vetas, 10,000 ft.).

We have found this species only in the Temperate Zone of the Eastern Andes.

Subia, 1; Bogotá, 1; Chipaque, 9; Choachí, 2; Palo Hueco, 1; La Porquera, 2.

(4053) **Conirostrum fraseri** *Scl.*

Conirostrum fraseri Scl., P. Z. S., 1858, p. 452 (Cuenca, Ecuador).

Four specimens from the Valle de las Pappas introduce this Ecuadorian species into Colombia. They agree with comparable Ecuador specimens.

Valle de las Pappas, 4.

(4056) **Conirostrum albifrons** *Lafr.*

Conirostrum albifrons Lafr., Rev. Zool., 1842, p. 301 (Colombia); Scl. & Salv., P. Z. S., 1879, p. 496 (Sta. Elena).

Inhabits the upper part of the Subtropical and the Temperate Zones of all three ranges.

Cerro Munchique, 1; Almaguer, 3; above Salento, 5; Laguneta, 1; Santa Isabel, 1; Sta. Elena, 1; El Roble, 6; Palo Hueco, 2; Subia, 2.

(4057) **Conirostrum atrocyaneum** *Lafr.*

Conirostrum atrocyaneum Lafr., Rev. Zool., 1848, p. 9 (Rio Napo).

An adult male from Cerro Munchique in the Western Andes, agrees with the description of this species of which I have seen no authentic specimens. It appears not to have been before recorded from Colombia.

Cerro Munchique, 1.

(4061) **Dacnis cayana cayana** (*Linn.*).

Motacilla cayana Linn., Syst. Nat., I, 1766, p. 336 (Cayenne).

I have no specimens from Peru but four adult males and three females from the eastern base of the Eastern Andes cannot, in my opinion, be separated from British Guiana birds of which we have a large series. The black throat-patch may average greener but the difference is too slight and inconstant to be of diagnostic value. Females from both localities are indistinguishable.

La Morelia, 1; Florencia, 4; Villavicencio, 1.

(4064) **Dacnis cayana cœrebicolor** *Scl.*

Dacnis cœrebicolor Scl., Cont. Orn., 1851, p. 106 ("Bogotó" = Magdalena Valley); Wyatt, Ibis, 1871, p. 324 (Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 497 (Remedios).

Dacnis cayana cœrebicolor Hellm., P. Z. S., 1911, p. 1095 (Noanamá; Nóvita; Tadó; Sipi; Jimenez; R. Oscuro).

This race like many other Tropical Zone birds, occupies the Pacific coast region southward into Ecuador and north and east through Antioquia to the hunid forested area of the lower central Magdalena. As Hellmayr (*l. c.*) has pointed out Pacific coast specimens are not all typical, most of them averaging paler, an exception, therefore, to the rule that when Pacific coast and Magdalena representatives of a species differ in color those from the former region are darker.

None of our eight males from the Pacific coast is as dark (*i. e.* purple) as the most deeply colored of our Magdalena Valley birds. Some, however, of the birds in both series are alike, while the palest of the Pacific coast birds are not distinguishable in color from *D. cayana napœa,* a form standing between *cœrebicolor* and *ultramarina* in color.

Specimens from eastern Panama (Chepigana) are typical of *ultramarina,* but I agree with Hellmayr that the facts at hand warrant the treatment of all these forms as subspecies of *cayana.*

Juntas de Tamaná, 1; Nóvita, 1; San José, 4; Barbacoas, 4; Buenavista, Nariño, 1; Puerto Valdivia, 5; near Honda, 3; 'Bogotá,' 2; ? Andalucia (3000 ft. w. slope), 1 ♀, in worn plumage.

(4067) **Dacnis angelica** *Bonap.*

Dacnis angelica "De Fillipe" Bonap., Atti sesta Riun. Sc. Ital., 1845, p. 404 (Brasil).

Found by us only in Amazonian Colombia. Three males agree with one from Cayenne.

La Morelia, 5.

(4069) **Dacnis egregia egregia** *Scl.*

Dacnis egregia Scl., P. Z. S., 1854, p. 251 (New Grenada); Scl. & Salv., P. Z. S., 1879, p. 497 (Remedios; Neché).

Found only in the Tropical Zone of the Magdalena Valley. The Ecuadorian form, *D. e. æquatorialis,* averages slightly greener and the yellow areas are somewhat richer. The range of these forms appears to be interrupted, no connection apparently existing between the Colombian and Ecuadorian birds.

Honda, 4; Chicoral, 1; Purificacion, 1.

(4071) **Dacnis venusta fuliginata** *Bangs.*

Dacnis venusta fuliginata Bangs, Proc. Biol. Soc. Wash., XXI, 1908, p. 160 (Jimenez, w. Col.); Hellm., P. Z. S., 1911, p. 1094 (Noanamá; Nóvita; Jimenez; Rio Dagua).

Dacnis venusta Scl. & Salv., P. Z. S., 1879, p. 497 (Remedios).

Inhabits the Tropical Zone of the Pacific coast and eastward through Antioquia to the Magdalena Valley. Males from Puerto Valdivia and Bagado have an evident greenish tinge below, and thus approach true *venusta* with the type of which they have been compared.

Bagado, 1; Noanamá, 2; Barbacoas, 2; Puerto Valdivia, 1.

(4072) **Dacnis leucogenys** *Lafr.*

Dacnis leucogenys Lafr., Rev. Zool., 1852, p. 470 (Colombia).

This species was found only in the Tropical Zone of the Magdalena Valley.

Algodonal (near Banco), 2; Honda, 2.

(4079*a*) **Cyanerpes cyaneus pacificus** *Chapm.*

Cyanerpes cyaneus pacificus Chapm., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 655 (Barbacoas, Col.).

Char. subsp.— Similar to *C. c. cyaneus* (Linn.) but male with the turquoise crown-cap slightly darker, bluer in color and smaller in area, the blue band of the nape correspondingly wider, the inner margins of the wing-quills and under wing-coverts pale citron-yellow rather than canary-yellow; female darker, less yellowish green above, the under wing-coverts and inner margins of wing-quills much paler than in the female of *cyaneus*, straw-yellow rather than canary-yellow. More closely related to *Cyanerpes cyaneus gigas* (Bangs & Thayer) of Gorgona Island off the Colombia coast, which it resembles in the pale wing-lining, but wings and tail averaging longer, blue of the male less purple, particularly on the rump, the females not so dark above or so yellow below.

Although *Cyanerpes cyaneus* had not been recorded before from the mainland of the Pacific Coast of South America, we found this form not uncommon from Buenaventura southward.

Buenaventura, 2; San José, 2; Los Cisneros, 2; Tumaco, 1; Barbacoas, 6.

(4081) **Cyanerpes cærulea microrhyncha** (*Berl.*).

Cœreba cœrulea microrhyncha Berl., J. f. O., 1884, p. 287 (Bucaramanga, Col.).

Cœreba cœrulea Scl. & Salv., P. Z. S., 1879, p. 497 (Remedios; Medellin).

Cyanerpes cœrulea microrhyncha Hellm., P. Z. S., 1911, p. 1097 (Nóvita; San Joaquim; Rio Cajon).

Cyanerpes cœruleus microrhynchus Allen, Bull. A. M. N. H., XIII, 1900, p. 173 (Bonda; Minca; Onaca; Las Nubes).

Inhabits the Tropical Zone but appears to be absent from the Cauca Valley. Fourteen specimens from the Pacific coast agree with twelve native-made skins from the vicinity of Honda. A single female from Buena Vista is decidedly darker, bluer green than Magdalena Valley birds and has a slightly longer bill.

Quibdó, 1; Juntas de Tamaná, 1; Noanamá, 6; Barbacoas, 6; near Honda, 12; Buena Vista (above Villavicencio), 1 (?).

(4086) **Chlorophanes spiza exsul** *Berl. & Tacz.*

Chlorophanes spiza exsul Berl. & Tacz., P. Z. S., 1883, p. 543 (Chimbo, Ecuador); Hellm., P. Z. S., 1911, p. 1096 (Noanamá; Nóvita).

Specimens from the Pacific coast region agree with others from Ecuador and are clearly to be referred to this form, which, however, very closely resemble true *spiza*. From lower Orinoco, Trinidad, and Cayenne birds, the west Colombian and west Ecuadorian specimens differ mainly in being slightly smaller with smaller bills. The Ecuadorian bird averages slightly greener, but the difference is wholly overlapped by individual variation. The Central American form, *C. s. guatemalensis* is decidedly greener than *exsul* or *spiza*, but has the bill as large as in *exsul* while the wing (in specimens from Costa Rica, Chiriqui and Panama) is little if any longer than in *C. s. exsul.*

It is interesting to observe that a specimen from Cocal (alt. 4000 ft.)

is typical of *exsul* while those from Lomitas and San Antonio, but one and two thousand feet higher in the same range, are equally typical of *cærulescens*.

Cocal, 1; Buenaventura, 2; San José, 1.

(4087) **Chlorophanes spiza cærulescens** *Cass.*

Chlorophanes cærulescens Cass., Proc. Acad. N. S. Phila., 1864, p. 268 (Yuracarès, Bolivia).

Chlorophanes atricapilla Wyatt, Ibis, 1871, p. 324 (Canta; San Nicolas); Scl. & Salv., P. Z. S., 1879, p. 497 (Concordia; Remedios).

Specimens from the Subtropical Zone of the Western and Central Andes, and Tropical Zone of the Eastern Andes, are all evidently typical of this blue form of which I have one specimen from the falls of the Madeira.

Las Lomitas, 2; San Antonio, 2; Miraflores, 3; La Frijolera, 2; Consuelo (above Honda), 3; Aguadita, 3; La Palma, 1; Florencia, 3; La Morelia, 1.

Procniatidae

FAMILY TERSINIDÆ. SWALLOW-TANAGERS.

(4093) **Tersina viridis occidentalis** (*Scl.*).

Procnias occidentalis Scl., P. Z. S., 1854, p. 249 (New Grenada).

Procnias tersa Scl. & Salv., P. Z. S., 1879, p. 497 (Remedios).

Procnias viridis Allen, Bull. A. M. N. H., XIII, 1900, p. 173 (Minca; Valparaiso).

Tersina viridis occidentalis Hellm., P. Z. S., 1911, p. 1099 (Noanamá; Nóvita).

Frequenting both forests and semi-arid country; this wide-ranging species occurs not only in all the faunas of the Tropical Zone in Colombia but reaches the Subtropical Zone as well.

Juntas de Tamaná, 2; Nóvita, 4; Caldas, 1; San Antonio, 8; Miraflores, 1; Popayan, 1; near Honda, 1; Villavicencio, 5.

FAMILY TANAGRIDÆ. TANAGERS, EUPHONIAS.

(4101) **Chlorophonia pretrei** (*Lafr.*).

Tanagra pretrei Lafr., Rev. Zool., 1843, p. 97 (Colombia).

Chlorophonia pretrii Scl. & Salv., P. Z. S., 1879, p. 498 (Sta. Elena).

Taken only in the upper part of the Subtropical Zone of the Western Andes, and in the Temperate Zone of the Central Andes.

Cerro Munchique, 1; Santa Isabel, 1; Sta. Elena, 3.

(4103) **Tanagra cyanocephala cyanocephala** (*Vieill.*).

Pipra cyanocephala Vieill., Nouv. Dict. d'Hist. Nat., XIX, 1818, p. 165 (Trinidad).

A wide-ranging but apparently not common species. Males from the west slope of the Western Andes agree with others from the eastern slope of the Eastern Andes and all are like a good series from near Merida. One of three Ecuador males (labeled "Quito") has the yellow areas decidedly paler than in Colombian specimens and evidently represents *pelzelni* Scl., but a second 'Quito' specimen and one from Valle de Cumbaza, Mt. Chimborazo, are very close to Venezuela specimens. A specimen from La Sierra, south of Popayan resembles these two Ecuador specimens and if *pelzelni* be a valid form should possibly be referred to it.

Caldas, 1 ♀, 2 ♂♂; "Antioquia," 1 ♂; La Sierra, 1 ♂; Buena Vista, 2 ♂♂, 1 ♀.

(4106) **Tanagra aurea pileata** (*Berl.*).

Euphonia aurea pileata Berl., Rev. Tan. Int. Orn. Cong., 1910, p. 1014 (Quiribana de Caicara, Venezuela).

A male from Buena Vista above Villavicencio is evidently to be referred to this lately described race. It agrees in color, but is somewhat smaller (wing 56 mm.) than an essentially topotypical specimen of *pileata*, from Maripa, Venezuela (wing 58 mm.).

Buena Vista, 1.

(4112) **Tanagra xanthogastra chocoensis** (*Hellm.*).

Euphonia xanthogaster chocoensis Hellm., Rev. Franc. d'Orn., II, 1911, p. 23 (Rio Cajon, w. Col.); P. Z. S., 1911, p. 1100 (Noanamá; Cajon; Sipi).

Euphonia xanthogastra Scl. & Salv., P. Z. S., 1879, p. 498 (Concordia).

Inhabits the Tropical and Subtropical Zones from the Pacific Coast east to the western slope of the Central Andes.

Specimens from the Pacific coast region are typical of this form and differ from *T. x. brevirostris* in the paler color of the yellow areas, particularly of the crown. In size, however, birds from approximately the same altitudes agree. Thus specimens from San José and Barbacoas are of about the same size as those from La Morelia; again, San Antonio or Miraflores specimens, while resembling *chocoensis* in color are as large as specimens of *brevirostris* from La Palma and La Candela. Apparently, therefore, with both forms there is a corresponding increase in size with increase in altitude.

Alto Bonito, 3; Juntas de Tamaná, 1; Nóvita, 1; San José, 1; Barbacoas, 8; La Frijolera, 3; Nóvita Trail (6000 ft.), 1; Las Lomitas, 1; San Antonio, 5; Cerro Munchique, 1; Gallera, 1; Cocal, 2; Ricaurte, 1; Miraflores, 3; Salento, 1.

Measurements of Males.

		Wing	Tail
T. x. chocoensis,	Sam José,	61	33
" " "	Barbacoas,	59	33
" " "	"	57	31
T. x. brevirostris,	La Morelia,	59	32
" " "	"	61	33
T. x. chocoensis,	San Antonio,	63	35
" " "	Miraflores,	63	35
" " "	"	66	35
T. x. brevirostris,	La Candela,	65	37
" " "	"	67	38
" " "	La Palma,	66	37

(4112*a*) **Tanagra xanthogastra brevirostris** (*Bonap.*).

Euphonia brevirostris Bonap., Rev. et. Mag., 1851, p. 136 (Colombia).

This richly colored form is found in the Subtropical Zone of the western slope of the Central Range, and in both Tropical and Subtropical Zones of the Eastern Andes. As with the west Colombian form, specimens from the lower altitudes average smaller. Thus three males from La Morelia (alt. 600 ft.) average wing, 61.5 mm., while three males from La Candela (alt. 6500 ft.), and La Palma (alt. 5500 ft.) average wing, 66 mm. There appears to be no difference in color between birds from mountains and lowlands. Although specimens from the higher altitudes are as large as the largest 'Quito' birds, none shows any approach toward the purple-backed form from that region (*T. x. quitensis* Nels.) and none have the crown as pale as Quito specimens in which the back is as blue as in *quitensis*.

La Palma, 2; La Candela, 4; Andalucia (5000 ft.), 1; Caquetá Trail, (2500 ft.), 1; La Morelia, 4; Florencia, 2; Quetame, 1; Buena Vista, 2.

(4116) **Tanagra concinna** (*Scl.*).

Euphonia concinna Scl., P. Z. S., 1854, p. 98, pl. 65, fig. 2 (Bogotá).

This species, known only from the Bogotá region, we have taken only in the Tropical Zone of the upper Magdalena Valley near Honda, whence we have five specimens.

Near Honda, 5.

(4118) **Tanagra saturata** (*Cab.*).

Phonasca saturata Cab., J. f. O., 1860, p. 336 ("New Granada").

Found by us only in the Cauca Valley and arid upper Dagua basin at Caldas. Five males from Caldas agree with two from western Ecuador. A male from Cali has white oval subapical patches 7 mm. long on the inner web of the outer pair of rectrices.

Caldas, 6; Cali, 1.

(4119*a*) **Tanagra olivacea humilis** (*Cab.*).

Phonasca humilis Cab., J. f. O., 1860, p. 334 (Costa Rica).
Euphonia minuta Scl. & Salv., P. Z. S., 1879, p. 498 (Remedios).

Seven males from the Tropical Zone of the Pacific coast and Antioquia agree with others from Panama (Canal Zone), and differ from a British Guiana series in having the hind-head and nape decidedly more purple, the back and throat somewhat more purple, the frontal band much wider.

Quibdó, 3; Baudo, 1; Juntas de Tamaná, 1; Noanamá, 6; Barbacoas, 1; Puerto Valdivia, 1.

(4121) **Tanagra fulvicrissa purpurascens** (*Hart.*).

Euphonia fulvicrissa purpurascens Hart., Nov. Zool., VIII, 1901, p. 370 (Pambilar, n. w. Ecuador).

An adult male from Barbacoas is apparently typical of this form.

Barbacoas, 1.

(4121*a*) **Tanagra fulvicrissa omissa** (*Hart.*).

Euphonia fulvicrissa omissa Hart., Bull. B. O. C., XXXIII, 1913, p. 77 ('Bogotá,' type, and Noanamá).
Euphonia fulvicrissa Cass., Proc. Acad. N. S. Phila., 1860, p. 143 (Falls Truando) Scl. & Salv., P. Z. S., 1879, p. 498 (Remedios; Neché).
Euphonia fulvicrissa subsp.? Hellm., P. Z. S., 1911, p. 1100 (Noanamá; El Tigre).

Our specimens are all from the Tropical Zone of the Pacific coast. The type doubtless came from the central Magdalena Valley. Hartert (*l. c.*), on examination, states that Sclater's type of *fulvicrissa,* said to have come from Santa Marta, "agrees entirely with skins from Central America."

Quibdó, 1; Bagado, 1; Juntas de Tamaná, 1; Noanamá, 1; San José, 1.

(4127) **Tanagra crassirostris crassirostris** (*Scl.*).

Euphonia crassirostris Scl., P. Z. S., 1856, p. 277 (Bogotá); Wyatt, Ibis, 1871, p. 324 (Cocuta Valley; Bucaramanga); Robinson, Flying Trip, 1895, p. 161 (R. Magdalena); Allen, Bull. A. M. N. H., XIII, 1900, p. 170 (Bonda; Onaca; Minca; Cacagualito).

Inhabits the Tropical Zone of the Cauca and Magdalena Valleys. Specimens from the vicinity of Honda are doubtless topotypical, and with Cauca Valley birds average larger and have more purple above than those from the northern parts of the range of the species (Costa Rica to east Venezuela) for which von Berlepsch[1] accepts the name *brachyptera* (Cab.).

Specimens from Puerto Berrio, while as small as northern birds, have the purple color above of extreme examples of *crassirostris*.

Puerto Valdivia, 6; La Manuelita, 2; Cauca Valley, 3; Puerto Berrio, 3; Honda, 5; El Consuelo, 1; Chicoral, 1.

Comparative wing-measurements are as follows: Cauca Valley (4), 64.2 mm.; Honda (4), 65; Puerto Berrio (3), 60.5; Santa Marta (10), 61.2; north-east Venezuela (2), 61; Boqueron, Chiriqui (3), 62.5.

(4129) **Tanagra melanura** (*Scl.*).

Euphonia melanura Scl., Conts. Orn., 1851, p. 86 (Barra de Rio Negro).

An adult male from Florencia is less purple than 'Napo' specimens.

Florencia, 1.

(4135) **Tanagra chrysopasta** (*Scl. & Salv.*).

Euphonia chrysopasta Scl. & Salv., P. Z. S., 1869, p. 438, pl. xxx, figs. 1, 2 (Lower Ucayali).

Found only in the Tropical Zone of the eastern slope of the Eastern Andes.

Buena Vista, 1; Villavicencio, 3.

(4144) **Chlorochrysa calliparæa bourcieri** (*Bonap.*).

Calliste bourcieri Bonap., Compt. Rend., XXXII, 1851, p. 76 (Bagnos, Tungurague, Ecuador).

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[1] Rev. Tanag., Int. Orn. Cong., 1910, p. 1012.

Found by us only in the Subtropical Zone at the head of the Magdalena Valley.

Near San Agustin, 2; La Candela, 1.

(4145) **Chlorochrysa phœnicotis** (*Bonap.*).

Calliste phœnicotis BONAP., Compt. Rend., XXXII, 1851, p. 76 (Ecuador).

Taken only in the Subtropical Zone of the Western Andes. Our specimens agree with others from Ecuador.

Nóvita Trail (7200 ft.), 2; Cerro Munchique, 1; Gallera, 6.

(4147) **Chlorochrysa nitidissima** *Scl.*

Chlorochrysa nitidissima SCL., P. Z. S., 1873, p. 728, pl. x (Antioquia); SCL. & SALV., P. Z. S., 1879, p. 498 (Antioquia; Jerico); HELLM., P. Z. S., 1911, p. 1101 (Siató; Pueblo Rico).

We found this species only in the Subtropical Zone of the Western and Central Andes. There is no definite record of its occurrence in the Eastern Andes.

Las Lomitas, 4; San Antonio, 3; Gallera, 1; Salento, 2.

(4149) **Pipridea melanota venezuelensis** *Scl.*

Pipridea venezuelensis SCL., P. Z. S., 1856, p. 265 (Caracas, Venezuela); WYATT, Ibis, 1871, p. 325 (Canuto).

A bird of the Subtropical Zone common in the Bogotá region but rare to the westward. We have only two specimens from the Western Andes, none from the Central Andes, and four from the Eastern Andes. Specimens from near Bogotá agree with Merida specimens but the West Andean birds are decidedly paler below and represent the extreme of differentiation from true *melanota*.

Rio Lima, 1; Popayan, 1; Aguadita, 4; Tenasuca, 4.

(4150) **Procnopis vassori** (*Boiss.*).

Tanagra (*Euphone* ?) *vassorii* BOISS., Rev. Zool., 1840, p. 4 (Bogotá).
Diva vassori SCL. & SALV., P. Z. S., 1879, p. 498 (Sta. Elena).

Inhabits the Temperate Zone and upperparts of the Subtropical Zone of all three ranges.

Paramillo, 1; Andes w. of Popayan (10,340 ft.), 2; La Florida (7700 ft.), 7; Almaguer, 7; Salento, 1; Laguneta, 3; Sta. Elena, 11; El Eden, 6; Rio Toché, 1; El Roble, 6; El Piñon, 1.

(4155) **Tangara chilensis** (*Vig.*).

Aglaia chilensis VIG., P. Z. S., 1832, p. 3 (Chili = Bolivia).

Miller's capture of a male of this species on the western slope of the Eastern Andes below Andalucia indicates that it crosses the range at this point. This specimen agrees with one from Florencia and both are paler below than one from Bolivia.

Andalucia (w. slope, 5000 ft.), 1; Florencia, 1.

(4163) **Tangara schrankii** (*Spix*).

Tanagra schrankii SPIX, Av. Bras., II, 1825, p. 38, pl. 51, fig. 1 (n. Brazil; *cf.* Berl. Rev. Tanag. Int. Orn. Cong., 1910, p. 1028).

Florencia, 1 ♀.

(4164) **Tangara johannæ** (*Dalmas*).

Calliste johannæ DALMAS, Bull. B. O. C., XI, 1900, p. 35 (Buenaventura, Col.).
Calospiza johannæ HELLM., P. Z. S., 1911, p. 1101 (Tadó; Nóvita; Condoto).

One of the well-marked species which characterize the Tropical Zone of the Pacific coast to which it appears to be restricted.

Andagueda, 1; Juntas de Tamaná, 4; Noanamá, 1; San José, 2; Barbacoas, 1.

(4164*a*) **Tangara florida auriceps** *Chapm.*

Tangara florida auriceps CHAPM., Bull. A. M. N. H., XXXIII, 1914, p. 188 (Buenavista, Nariño, Col.).

Char. subsp.— Similar to *T. f. florida* Scl. & Salv. but smaller (size of *T. f. arcoei*), yellow of head of much greater extent, reaching to the forehead; black of loral region and about base of bill wider, scapulars black without, or with but slight greenish borders. ♂, wing, 65; tail, 40; tarsus, 15; culmen, 9.5. ♀, wing, 62; tail, 40; tarsus, 15; culmen, 9.5.

Inhabits the Tropical Zone of the Pacific Coast. An immature female from Nóvita, on the San Juan River, though probably *auriceps*, cannot with certainty be referred to either form. It indicates, however, the continuous range of this species through the humid Tropical Zone of the Pacific Coast and the consequent intergradation of *auriceps* with *arcœi*. Nevertheless, *auriceps* most nearly resembles in color the form (*T. f. florida*) from which it is geographically most widely separated.

Nóvita, 1?; Buenavista, Nariño, 9.

(4168) **Tangara guttata bogotensis** *Hellm. & Seil.*

Tangara guttata bogotensis Hellm. & Seil., Arch. für Naturg., 1912, p. 57 (Bogotá, Coll.).
Calliste guttata Wyatt, Ibis, 1871, p. 325 (Ocaña; Santa Rosa; Alto).

We met with this species only at Buena Vista, where three specimens were secured. These agree with the description of *bogotensis* and with two 'Bogotá' skins in our collection. They differ, however, from two specimens from the Central Andes west of Honda which evidently represent a connecting form between *bogotensis* and *eusticta,* for which, since it cannot well be referred to either the Bogotá region or Costa Rican race I have proposed the name *Tangara guttata tolimæ.*

Buena Vista, 3.

(4168*a*) **Tangara guttata tolimæ** *Chapm.*

Tangara guttata tolimæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 187 (Cen. Andes w. of Honda, Col.).

Char. subsp.— Similar to *T. g. eusticta* Todd, but upperparts darker and less spotted, the yellow of the head more restricted as in *T. g. bogotensis* Hellm. & Seil.

This is a connecting form between *T. g. bogotensis* of the Eastern Andes and *T. g. eusticta* of Costa Rica.

W. of Honda, 3.

(4169) **Tangara xanthogastra** (*Scl.*).

Calliste xanthogastra Scl., Jard. Cont. Orn., 1851, p. 23 (Rio Negro, Brazil).

La Morelia, 1 ♂.

(4171) **Tangara rufigula** (*Bonap.*).

Tanagrella rufigula Bonap., Comp. Rend., XXXII, 1851, p. 77 (Ecuador).
Calospiza rufigula Hellm., P. Z. S., 1911, p. 1102 (La Selva).

Taken only in the Western Andes in southwestern Colombia.

Gallera, 2; Buenavista, Nariño, 2; Ricaurte, 4.

(4172) **Tangara aurulenta aurulenta** (*Lafr.*).

Tanagra aurulenta Lafr., Rev. Zool., 1843, p. 290 (Bogotá).
? *Calospiza aurulenta* Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ibagüe).

Inhabits the Subtropical Zone of the Eastern Andes and eastern slope of the Central Andes.

Tangara sclateri may possibly inhabit the forests of this zone on the eastern slope of the Eastern Andes, but unfortunately the portion of this zone through which we passed was arid and hence without forest.

La Candela, 4; Fusugasugá, 2; Aguadita, 3; El Roble, 1; Subia, 6.

(4172*a*) **Tangara aurulenta occidentalis** *Chapm.*

Tangara aurulenta occidentalis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 188 (San Antonio, Col.).

Calliste aurulenta Scl. & Salv., P. Z. S., 1879, p. 498 (Concordia; Frontino).

Calospiza aurulenta aurulenta Hellm., P. Z. S., 1911, p. 1102 (Pueblo Rico).

Char. subsp.— Similar to *T. a. aurulenta* but underparts more richly colored, approaching raw-sienna rather than analine-yellow, under tail-coverts, particularly, deeper; the crown and rump slightly more intense, the margins to the feathers of the back and, especially secondaries and wing-coverts, similar to color of head, and, in adult specimens, without the tinge of green present in *aurulenta;* the bill averaging longer.

Common in the Subtropical Zone of the Western Andes, but apparently less numerous in the Central Andes. Specimens from Ricaurte in extreme southern Colombia closely approach the Ecuadorian form, *T. a. goodsoni*, which is an intermediate between *occidentalis* and true *aurulenta* of the Eastern Andes.

Las Lomitas, 4; San Antonio, 9; Gallera, 6; Cocal, 2; Ricuarte, 7; Miraflores, 1; La Frijolera, 5.

(4178) **Tangara icterocephala** (*Bonap.*).

Calliste icterocephala Bonap., Comp. Rend., XXXII, 1851, p. 76 (Ecuador); Scl. & Salv., P. Z. S., 1879, p. 498 (Frontino).

Calospiza icterocephala Hellm., P. Z. S., 1911, p. 1103 (Pueblo Rico).

Gallera, 1 ♂.

(4179) **Tangara vitriolina** (*Cab.*).

Callispiza vitriolina Cab., Mus. Hein., I, 1850, p. 28 (Colombia = Bogotá).

Calliste vitriolina Wyatt, Ibis, 1871, p. 325 (Ocaña; Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 498 (Medellin; Concordia).

Calospiza vitriolina Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ibagüe).

This comparatively dull-colored member of its genus inhabits rather open country with scrubby or brushy growth. It is therefore chiefly an inhabitant of the semi-arid portions of the Tropical Zone (except on the Caribbean coast) ranging upward through clearings to the Subtropical Zone. Two specimens from east of the Andes (Villavicencio; Barrigon) have the crown paler and are browner above and below than the remaining birds of the series. Doubtless they represent a separable form, but without examination of Cabanis' type and also of Sclater's type of "*Calliste ruficapilla*" it would, in my opinion, be unwise to name a second form.

Peque, 1; Caldas, 2; Cali, 2; San Antonio, 7; Gallera, 1; Popayan, 5; La Sierra, 2; La Manuelita, 3; Rio Frio, 2; Salento, 1; Barro Blanco, 5; La Frijolera, 1; Honda, 5; Chicoral, 3; La Candela, 2; La Palma, 1; San Agustin, 13; Andalucia, 3; Aguadita, 3; Fusugasugá, 1; Subia, 5; Tenasuca, 2; El Carmen, 3; El Alto de la Paz, 4; Villavicencio, 1; Barrigon, 1.

(4189) **Tangara lavinia lavinia** (*Cass.*).

Calliste lavinia Cass., Proc. Acad. Nat. Sci. Phila., X, 1858, p. 178 (Isthmus of Darien); *Ibid.*, 1860, p. 142 (Mts. R. Truando).

Calliste emiliæ Dalmas, Bull. B. O. C., XI, 1900, p. 35, (San José; El Paillon).

Calospiza lavinia lavinia Hellm., P. Z. S., 1911, p. 1103 (Sipi).

A strongly marked species of the Tropical Zone of the Pacific coast.

Juntas de Tamaná, 1; Nóvita, 1; Noanamá, 1; Buenaventura, 1; San José, 6; Buenavista, Nariño, 1.

(4190) **Tangara gyroloides gyroloides** (*Lafr.*).

Aglaia gyroloides Lafr., Rev. Zool., X, 1847, p. 277 (new name of *Aglaia peruviana* Swains. (nec. Desmarest) Anim. in Menag., 1838, p. 356 "Peru" Hellmayr, P. Z. S., 1911, p. 1104, substitutes "Colombia." I suggest adding Aguadita near Fusugasugá in the Bogotá region).

Calospiza gyroloides deleticia Bangs, Proc. Biol. Soc. Wash., XXI, 1908, p. 160 (San Antonio).

Calliste gyroloides Wyatt, Ibis, 1871, p. 325 (between Bucaramanga and R. Magdalena); Scl. & Salv., P. Z. S., 1879, p. 499 (Concordia; Remedios).

Calospiza gyroloides Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ibagüe).

Calospiza gyroloides gyroloides Hellm., P. Z. S., 1911, p. 1104 (Jimenez; Pueblo Rico; Rio Siató).

This form inhabits the Subtropical Zone of the Western Andes descending rarely to the Tropical Zone on the western slope (Jimenez); we did not find it to be common in the Central Andes above the Cauca Valley though Miller and Boyle took four specimens at La Frijolera and it is recorded from Remedios. It is not uncommon in the Subtropical Zone of the western slope of the Eastern Andes.

Swainson's description, as Hellmayr has shown, is clearly referable to the form occupying the greater part of the Andean region in Colombia.

Las Lomitas, 4; San Antonio, 4; Cocal, 1; Gallera, 3; La Frijolera, 4; Andalucia (w. slope, 4–5000 ft.), 5; Aguadita, 2; El Consuelo, above Honda, 1.

(4191) **Tangara gyroloides catharinæ** (*Hellm.*).

C[alospiza] gyraloides catharinæ HELLM., P. Z. S., 1911, p. 1106 (Chaquimayo Carabaya, alt. 3000 ft., s. e. Peru).

This form, characterized by its small bill, comparatively wide yellow nuchal collar and shoulder-patch was found on the eastern slope of the Eastern Andes. It has been recorded from the Rio Meta but I am inclined to believe that these specimens may have come from the east Andean slopes.

Buena Vista, 4.

(4192) **Tangara gyroloides bangsi** (*Hellm.*).

C[alospiza] gyroloides bangsi HELLM., P. Z. S., 1911, p. 1105 (Boquete, Chiriqui).

Three specimens from Ricaurte (alt. 5000 ft.) in southwestern Colombia agree with topotypical examples of *bangsi* from Chiriqui. We have also ten specimens of this race from sea-level at Esmeraldas, and Rio d'Oro, Ecuador.

Mr. Hellmayr has called attention to the apparent hiatus in the range of this form, no examples of which appear to have been taken between those here recorded and Panama, whence we have a McLeannan specimen without exact locality. He suggests that *gyroloides* "is most probably confined to the high open country of the interior," and that *bangsi* will be found in the Colombian coast district. Hellmayr, however, records true *gyroloides* from the Tropical Zone on the Pacific coast (Jimenez, 1600 ft.) and the case, in my opinion, simply adds another species to the list of those occurring in southwestern Colombia, Ecuador and Panama, but which are unknown on the Colombian coast north of the Patia River.

Ricaurte, 3.

(4196) **Tangara palmeri** (*Hellm.*).

Calospiza palmeri HELLM., Rev. Franc. d'Ornith., 1909, p. 49 (Sipi, Col.); *Ibid.*, Ibis, 1910, p. 330, pl. v.

Known only from the Tropical Zone of the Pacific coast from San José northward to eastern Panama, whence we have three specimens in addition to those listed below.

San José, 2.

(4200) Tangara mexicana boliviana (*Bonap.*).

Callospiza boliviana Bonap., Comp. Rend., XXXII, 1851, p. 80 (Guarayos, Bolivia).

La Morelia, 2.

(4201) Tangara inornata inornata (*Gould*).

Calliste inornata Gould, P. Z. S., 1855, p. 158 (Bogotá); Cass., Proc. Acad. N. S. Phila., 1860, p. 142 (Turbo); Scl. & Salv., P. Z. S., 1879, p. 499 (Neché).

Doubtless occupies the Tropical Zone of the central Magdalena Valley and westward to the Atrato Valley. It is replaced in Panama by a nearly allied form.

Puerto Valdivia, 7.

(4202) Tangara nigroviridis nigroviridis *Lafr.*

Tangara nigro-viridis Lafr., Rev. Zool., 1843, p. 69 (Bogotá).
Calliste nigroviridis Scl. & Salv., P. Z. S., 1879, p. 488 (Sta. Elena; Envigado).

Inhabits the Subtropical Zone of all three ranges.

Paramillo Trail (9000 ft.), 1; San Antonio, 4; Gallera, 4; Cocal, 1; Salento, 2; Sta. Elena, 4; El Eden, 1; Fusugasugá, 1; Aguadita, 1; El Roble, 3; Subia, 6.

(4205) Tangara larvata fanny (*Lafr.*).

Aglaia fanny Lafr., Rev. Zool., 1847, p. 72 (Buenaventura, Col.).
Calliste francescæ Cass., Proc. Acad. N. S. Phila., 1860, p. 142 (Turbo).
Calliste larvata Scl. & Salv., P. Z. S., 1879, p. 499 (Remedios).
Calospiza larvata fanny Hellm., P. Z. S., 1911, p. 1107 (Noanamá; Nóvita).

Occupies the Tropical Zone of the Pacific coast and eastward through Antioquia to the Magdalena. The status of this form has been clearly defined by Hellmayr (*l. c.*).

Bagado, 4; Nóvita, 3; Noanamá, 2; San José, 5; Los Cisneros, 2; Barbacoas, 5; Buenavista, Nariño, 1; Puerto Valdivia, 1; Honda, 1.

(4208) Tangara cyaneicollis cæruleocephala (*Swains.*).

Aglaia cæruleocephala Swains., Anim. in Menag., 1838, p. 356 (Peru).

The distribution of this form in Colombia is of exceptional interest. It occupies the Subtropical Zone of the eastern slope of the Eastern Andes and it appears to have crossed the comparatively low (7000 ft.) Andalucia Pass, and thus entered the upper Magdalena Valley region. Birds from near San Agustin have the rump and wing-coverts quite as brassy gold as in specimens from southeastern Ecuador and can readily be distinguished from West Andean specimens, and, as a rule, from those taken near Fusugasugá. A specimen, however, from the Central Andes, west of Honda, appears to be referable to *cæruleocephala* indicating the northward extension of this form along the eastern slope of this range from Candela and La Palma.

Cen. Andes w. of Honda, 1; La Palma, 2; La Candela, 4; near San Agustin, 10; Andalucia, (w. slope 3000 ft.), 6; Quetame, 2; Buena Vista, 4.

(4209) **Tangara cyaneicollis granadensis** (*Berl.*).

Calliste cæruleocephala subsp. *granadensis* Berl., J. f. O., 1884, p. 290 (Bucaramanga and Bogotá; type "Bogotá-Coll" *cf.* Berl., Rev. Tanag. p. 1033); Wyatt, Ibis, 1871, p. 325 (Mts. between Bucaramanga and R. Magdalena); Scl. & Salv., P. Z. S., 1879, p. 499 (Concordia; Frontino).

Calospiza cyaneicollis granadensis Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ibagüe).

Inhabits the Subtropical Zone of the Western Andes, western slope of the Central Andes, and, from the latitude of Fusugasugá northward, the eastern slope of the Central Andes and western slope of the Eastern Andes. Specimens from the Western Andes have the rump and wing-coverts bluer than those from the western slope of the Eastern Andes and thus approach *cyanopygia* of western Ecuador. Birds from the type-locality (Bucaramanga and west Bogotá region) are nearer the golden-rumped form *cæruleocephala*. This fact in connection with the distribution in Colombia of this and the preceding race, indicates that *granadensis* was derived from the westward whence it has ranged eastward around the northern end of the Western and Central Andes to the western slope of the Eastern Andes, while *cæruleocephala*, as above remarked, has entered the upper Magdalena Valley region over the comparatively low Andalucia pass (alt. 7000 ft.).

Las Lomitas, 3; San Antonio, 3; Cocal, 1; Miraflores, 6; La Frijolera, 3; El Consuelo, above Honda, 1; Fusugasugá, 1; Aguadita, 1; Tenasuca, 2.

(4212) **Tangara ruficervix ruficervix** (*Prev. & Des Murs*).

Tanagra ruficervix Prev. & Des Murs, Voy. Venus, Atlas Ois., 1846, pl. v, fig. 1 (no type-locality; Berl., Rev. Tanag., proposes Bogotá).

Calliste ruficervix Scl. & Salv., P. Z. S., 1879, p. 499 (Concordia).

Calospiza ruficervix ruficervix Hellm., P. Z. S., 1911, p. 1108 (Pueblo Rico).

Found in the Subtropical Zone of all three ranges.

San Antonio, 8; Cerro Munchique, 3; Gallera, 1; Ricaurte, 3; Miraflores, 2; Salento, 1; La Candela, 1; near San Agustin, 1; Fusugasugá, 2; Aguadita, 1; El Roble, 1.

(4215) **Tangara labradorides** (*Boiss.*).

Tanagra labradorides Boiss., Rev. Zool., 1840, p. 67 (Bogotá).
Calliste labradorides Scl. & Salv., P. Z. S., 1879, p. 499 (Concordia; Sta. Elena).
Calospiza labradorides Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ibagüe); Hellm., P. Z. S., 1911, p. 1109 (Pueblo Rico).

Common in the Subtropical Zone of all three ranges.

Las Lomitas, 1; San Antonio, 20; Cerro Munchique, 4; Miraflores, 5; Salento, 4; Sta. Elena, 5; El Eden, 1; La Candela, 3; La Palma, 1; Fusugasugá, 4; Aguadita, 4; El Roble, 4; Subia, 6.

(4216) **Tangara melanotis** (*Scl.*).

Calliste melanotis Scl., Ibis, 1876, p. 408, pl. xii, fig. 1 (Rio Napo, Ecuador).

La Palma, 1.

(4219) **Tangara parzudaki** (*Lafr.*).

Tanagra parzudakii Lafr., Rev. Zool., 1843, p. 97 (Bogotá).

Found by us only in the Subtropical Zone of the Eastern Andes and on the eastern slope of the Central Andes at the head of the Magdalena River.

La Palma, 1; Aguadita, 2; El Roble, 1; Subia, 7.

(4221) **Tangara venusta** (*Scl.*).

Calliste venusta Scl., P. Z. S., 1854, p. 248 (Bogotá); Wyatt, Ibis, 1871, p. 325 (Alto); Scl. & Salv., P. Z. S., 1879, p. 499 (Frontino).

Not uncommon in the Subtropical Zone of all three ranges.

San Antonio, 2; Cerro Munchique, 7; Andes w. of Popayan (10,340 ft.), 1; La Florida, 1; Cocal, 1; Miraflores, 1; Salento, 2; La Candela, 1; Aguadita, 1; El Roble, 1; Subia, 5.

(4227) **Tangara atricapilla** (*Lafr.*).

Tanagra atricapilla Lafr., Rev. Zool., 1843, p. 290 (Colombia).
Calliste atricapilla, Wyatt, Ibis, 1871, p. 325 (Pirico; Canuto, etc.); Scl. & Salv., P. Z. S., 1879, p. 499 (Retiro; Concordia; Frontino).
Calospiza atricapilla Allen, Bull. A. M. N. H., XIII, 1900, p. 169 (Valparaiso; Las Nubes).

Common in the Subtropical Zone of all three ranges. I can detect no constant well-marked differences in our series from the appended localities. Western birds have the bill larger and the females may be brighter, while two males from La Candela have the greater wing-coverts externally margined with Antwerp-blue, but this may be an individual variation.

An excellent series of ten males from Valparaiso in the Santa Marta group averages greener than birds from the localities above mentioned.

La Frijolera, 1; San Antonio, 5; Cerro Munchique, 2; Ricaurte, 3; La Sierra, 6; Popayan, 2; Sta. Elena, 3; Barro Blanco, 3; Aguadita, 5; El Roble, 5; Subia, 7.

(4232) **Iridosornis dubusia dubusia** (*Bonap.*).

Tanagra dubusia Bonap., Consp. Av., I, 1850, p. 239 (Colombia).
Iridosornis dubusia Scl. & Salv., P. Z. S., 1879, p. 500 (Sta. Elena).

Occupies the Temperate Zone of the Eastern Andes and southward into Ecuador. A specimen collected by us at El Piñon agrees closely with two old Bogota skins and with two old, and three recently collected skins said to have come from west of Quito. In view, however, of the fact that we have a specimen of *I. d. ignicapilla* from Loja, Ecuador, it seems not improbable that these "Quito" skins came from east of that city. All have the crown-patch cadmium-yellow with a slight ochraceous tint rather than cadmium-orange or orange-chrome as in *I. d. ignicapilla.* The male in *Iridosornis dubusia* differs from the female in the greater extension posteriorly of the shiny purple-blue of the breast.

El Piñon, 1.

(4232*a*) **Iridosornis dubusia ignicapillus** *Chapm.*

Iridosornis dubusia ignicapillus Chapm., Bull. A. M. N. H., Vol. XXXIV, 1915, p. 656 (Andes w. of Popayan).

Char. subsp.— Similar to *I. d. dubusia* (Bonap.) of the Bogotá region but with the crown-patch orange-chrome or cadmium-orange instead of cadmium-yellow with a slight ochraceous tinge.

Inhabits the Temperate Zone of the more southern part of the Central and Western Andes.

Andes w. of Popayan (10,340 ft.), 12; Almaguer, 6.

(4232*b*) **Iridosornis dubusia cæruleoventris** *Chapm.*

Iridosornis dubusia cæruleoventris Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 657 (Paramillo).

Char. subsp.— Crest cadmium-orange, as in *I. d. ignicapilla,* but differing from that race and also from *I. d. dubusia*, in having the ventral region and under tail-coverts dark blue of the same color as the belly, instead of chestnut-brown; and with no trace of chestnut on the under wing-coverts.

This well-marked race was discovered by Miller and Boyle in the Temperate Zone of the northern end of the Western Andes.

Paramillo, 2.

(4236) **Iridosornis porphyrocephala** *Scl.*

Iridornis porphyrocephala Scl., P. Z. S., 1855, p. 227, pl. 110 (Ecuador); Scl. & Salv., P. Z. S., 1879, p. 500 ("Medellin").

Found by us only in the Subtropical Zone of the Western Andes.

Nóvita Trail (7200 ft.), 1; San Antonio, 6; Cerro Munchique, 1; Cocal, 2.

(4240) **Pœcilothraupis lunulata lunulata** (*Du Bus*).

Tanagra lunulata Du Bus, Bull. Acad. Brux., VI, pt. I, 1839, p. 439 ("Honduras"; Berl., Rev. Tanag., substitutes Bogotá).

Pœcilothraupis lunulata Wyatt, Ibis, 1871, p. 325 (Vetas).

Common in the Temperate Zone of the Eastern Andes.

El Piñon, 4; Chipaque, 4; Choachi, 2; La Porquera, 9; La Mar, 3; La Pradera, 1.

(4245) **Pœcilothraupis palpebrosa palpebrosa** (*Lafr.*).

Tanagra palpebrosa Lafr., Rev. Zool., 1847, p. 71 ("Pasto in Peruvia" = Pasto, Colombia?).

Common in the Temperate Zone of the more southern parts of the Western and Central Andes, as far north as Santa Isabel.

Not taken by us in the Eastern Andes though it is known to occur there. Some specimens from Laguneta and Santa Isabel show some approach toward *olivaceiceps* in the olivaceous suffusion of the sides of the head; but all resemble true *palpebrosa* in the color of upper and underparts and a number exactly match it.

Andes w. of Popayan (10,340 ft.), 17; Almaguer, 4; Laguneta, 12; Santa Isabel, 1.

(4246) **Pœcilothraupis palpebrosa olivaceiceps** *Berl.*

Pœcilothraupis palpebrosa olivaceiceps Berl., Rev. Tanag. Int. Orn. Cong., 1912, p. 1045 (Sta. Elena, Col.).

Pœcilothraupis palpebrosa Scl. & Salv., P. Z. S., 1879, p. 500 (Sta. Elena).

Specimens from the Temperate Zone at the north end of the Western Andes have the characters of this race well developed but farther south in this range true *palpebrosa* occurs. A single specimen from the Rio Toché agrees with these West Andean specimens rather than with our series from Laguneta, indicating that the faunal affinities of this locality are with Sta. Elena, the type-locality of *olivaceiceps,* rather than with Laguneta in the same latitude but on the western slope of the Central Andes.

Paramillo, 11; Rio Toché, 1.

(4252) **Buthraupis cucullata cucullata** (*Jard.*).

Tanagra cucullata Jard., Ill. Orn., N. S., 1841, pl. 43 (Ecuador).
Buthraupis cucullata Scl. & Salv., P. Z. S., 1879, p. 500 (Concordia).

This Ecuadorian species occurs in the Temperate Zone of both the Central and Western ranges, but appears to be replaced in the Eastern Andes by *B. c. gigas.* Our series agrees with topotypical birds from the Quito region.

Cerro Munchique, 2; Cocal, 4; Almaguer, 4; Laguneta, 1; Santa Isabel, 4.

(4253) **Buthraupis cucullata gigas** (*Bonap.*).

Dubusia gigas Bonap., Rev. et Mag., 1851, p. 171 (Bogotá).

This well-marked race, or possibly species, of the Temperate Zone of the Eastern Andes was common at El Piñon.

El Piñon, 3.

(4256) **Buthraupis eximia chloronota** (*Scl.*).

Buthraupis chloronata Scl., P. Z. S., 1854, p. 97, pl. lxvi ("In republ. Equatoriana").

Temperate Zone of the Western and Central Andes.

Nine specimens from the Temperate Zone of the Central Andes are clearly referable to the Quito rather than Bogotá form (*eximia*). All have a slight trace of blue on the rump indicating the probability of intergradation between these representative races. The Paramillo birds are without blue on the rump. In none of these specimens do the blue lesser wing-coverts cover the black bases of the greater coverts as they apparently do in 'Quito' skins.

Paramillo, 3; Santa Isabel, 7; Almaguer, 2.

(4257) **Buthraupis eximia eximia** (*Boiss.*).

Tanagra eximia Boiss., Rev. Zool., 1840, p. 66 (Bogotá).

A female from El Piñon, in the Temperate Zone of the Eastern Andes has the rump rather lightly marked with blue in detached areas. Another, from Palo Hueco, has the blue of the rump more pronounced.

El Piñon, 1; Palo Hueco, 1.

(4258) **Buthraupis edwardsi** *Elliot.*

Buthraupis edwardsi Elliot, Nouv. Arch. Mus. d'Hist. Nat., 1865, p. 77, pl. iv, fig. 2 (New Grenada).

Richardson secured five specimens of this rare Tanager on the lower slopes of the Western Andes in southwestern Colombia.

Buenavista, Nariño (1200 ft.), 4; Ricaurte (4000–5000 ft.), 1.

(4259) **Buthraupis rothschildi** *Berl.*

Buthraupis rothschildi Berl., Bull. B. O. C., VII, 1897, p. 3 (Cachabi, n. w. Ecuador).

An adult male of this rare species was collected on the Rio Andagueda in the Tropical Zone, by Mrs Kerr, thus extending its known range from northwest Ecuador. While therefore occurring in the same latitude with *B. melanochlamys* that species appears to be restricted to the Subtropical Zone while *rothschildi* occupies the lower or Tropical Zone.

Andagueda, 1.

(4260) **Buthraupis melanochlamys** *Hellm.*

Buthraupis melanochlamys Hellm., Bull. B. O. C., XXV, 1910, p. 112 (La Selva, 4600 ft. w. Colombia); P. Z. S., 1911, p. 1109.

Two females and a male collected by Miller and Boyle at La Frijolera at the lower border of the Subtropical Zone in the Western Andes, agree with Hellmayr's description of this species previously known only from the type.

La Frijolera, 3.

(4261) **Buthraupis aureocincta** *Hellm.*

Buthraupis aureocincta Hellm., Bull. B. O. C., XXV, 1910, p. 111 (Tatamá Mt., w. Colombia); P. Z. S., 1911, p. 1110.

Allen and Miller collected a pair of this species, hitherto known only from the type, on the trail from Cartago to Nóvita (alt. 7200 ft.) and hence near the type-locality.

Nóvita Trail, 2.

(4262) **Compsocoma somptuosa victorini** (*Lafr.*).

Tachyphonus victorini Lafr., Rev. Zool., 1842, p. 336 (Bogotá).

This species inhabits the Subtropical Zone of the mountains rising from the Magdalena Valley that is, the western slope of the Eastern Andes, and the eastern slope of the Central Andes. The more southern examples average darker above and have the margins of the wings a shade deeper blue. They thus show an approach toward *C. s. antioquiæ* and their probable intergradation with that form on the eastern slopes of the Central Andes between La Candela and El Eden is indicated by specimens from the latter locality in which the back is largely dark green and the margins of wings and tail nearer in color to *victorini* than to true *somptuosa*.

Near San Agustin, 3; La Palma, 3; La Candela, 4; El Roble, 2; Subia, 9.

(4264) **Compsocoma somptuosa antioquiæ** *Berl.*

Compsocoma somptuosa antioquiæ Berl., Rev. Tanag. Int. Orn. Cong. 1910, (1912), p. 1049 (Antioquia).

Compsocoma somptuosa Scl. & Salv., P. Z. S., 1879, p. 500 (Retiro; Medellin; Sta. Elena).

Inhabits the Subtropical Zone of both the Western and Central Andes in Antioquia and extends southward along the eastern slope of the Central Andes. A specimen from the Paramillo in the Western Andes agrees with a series from Sta. Elena (doubtless the type-locality or near it) the interscapulum being tinged with green, the margins of wings and tail lighter than in *cyanoptera*. Specimens from El Eden and Rio Toché as stated above, show an approach toward *victorini*, with which it is believed they intergrade.

Paramillo Trail (11,000 ft.), 1; Sta Elena, 11; Barro Blanco, 2; El Eden, 2; Rio Toché, 1.

(4265) **Compsocoma somptuosa cyanoptera** (*Cab.*).

Compsocoma cyanoptera Cab., J. f. O., 1866, p. 235 (Ecuador).

Our large series of this Tanager of the Subtropical Zone of the Cauca region shows in a most satisfactory manner its intergradation with its northern representative *C. s. antioquiæ* in the more northern parts of the Central Andes and, as said above, indicates the probable mergence of that form with the strongly differentiated *C. s. victorini* on the eastern slope of the Central Andes.

Specimens from La Sierra, near Almaguer, in that part of southern Colombia where the Andes form one complicated range, agree with Quito specimens and are thus typical of *cyanoptera* in which the back is black, the rump slightly and rarely not at all tinged with green, the margins to wings and tail but little lighter than the color of the shoulder. This form persists on the Western Andes (Cerro Munchique, La Florida, Gállera, Cocal, San Antonio) but on the western slope of the Central Andes an approach toward *antioquiæ* is evident in specimens from Miraflores, which while having the wings and tail-margins little if any lighter, have decidedly more green in the back, this color encroaching on the interscapulum, a feature which in addition to the paler blue wing and tail-markings characterizes *antioquiæ*. The intergradation of *cyanoptera* with *antioquiæ* is shown by these specimens.

In three specimens from Rio Toché and El Eden, on the eastern slope of the range, the green in the back is still more extensive than in *antioquiæ* reaching to the nape and they are therefore intermediate between *antioquiæ* and *victorini*. The Subtropical Zone doubtless extends along the eastern slope of the Central Andes continuously from El Eden to La Candela, where we have taken dark colored specimens of *victorini*, connecting the ranges of these birds and doubtless the birds themselves.

This case is interesting, for while *victorini* and *somptuosa* are obviously representative forms, it has not heretofore been suspected, I believe, that they intergrade, and the virtual proof of this fact indicates the importance of intensive collecting in a limited area.

San Antonio, 10; Cerro Munchique, 7; La Florida, 3; Gallera, 1; Cocal, 1; La Sierra, 2; Miraflores, 7; Salento, 2.

(4267) **Compsocoma notabilis** (*Jard.*).

Tanagra notabilis Jard., Edinb. N. Phil. Journ., II, 1855, p. 119 (e. Ecuador).
Compsocoma notabilis Hellm., P. Z. S., 1911, p. 1111 (Tatamá Mt., 6700 ft.).

Two specimens from the Subtropical Zone of the Western Andes agree with one from Ecuador.

Nóvita Trail (7200 ft.), 2.

(4268) **Dubusia tæniata** (*Boiss.*).

Tanagra tæniata Boiss., Rev. Zool., 1840, p. 67 (Bogotá).
Dubusia tæniata Scl. & Salv., P. Z. S., 1879, p. 500 (Sta. Elena).

We have taken only five specimens of this species, two at 10,340 ft., in the Western Andes west of Popayan, two at El Piñon (alt. 9600 ft.) and one at Fusugasugá (alt. 6000 ft.) in the Western Andes.

Confined chiefly to the Temperate Zone and doubtless occurring in all three ranges though we did not take it in the Central Andes.

Andes w. of Popayan (10,340 ft.), 2; El Piñon, 2; Fusugasugá, 1; Subia, 1.

(4271) **Thraupis episcopus leucoptera** (*Scl.*).

Tanagra leucoptera Scl., Cat. Bds. B. M., XI, 1886, p. 154 (Bogotá).

This bird replaces *T. c. cana* on the eastern slope of the Eastern Andes where it is one of the first species of Guianan fauna to be encountered in crossing from Bogotá to Villavicencio. We observed it in the arid Subtropical Zone between Cáqueza and Quetame (alt. 5000) whence it occurred continuously and in increasing numbers to the llanos.

Quetame, 4; Buena Vista, 1; Barrigon, 2.

(4272) **Thraupis cœlestis cœlestis** (*Spix*).

Tanagra cœlestis Spix, Av. Bras., II, 1825, p. 42, pl. 55, fig. 1.

Five specimens from La Morelia are typical of this species which appears not to have been before recorded from Colombia.

La Morelia, 5.

(4276) **Thraupis cana cana** (*Swains.*).

Tanagra cana Swains., Ornith. Draw., pt. 3, 1836, pl. 37 (locality unknown; Berl., Rev. Tanag. proposes "Venezuela"); Cass., Proc. Acad. N. S. Phila., 1860, p. 141 (Turbo); Wyatt, Ibis, 1871, p. 325 (Bucaramanga region up to 8000 ft.); Scl. & Salv., P. Z. S., 1879, p. 500 (Medellin); Robinson, Flying Trip, 1895, p. 161 (Barranquilla to Honda and Guaduas); Allen, Bull. A. M. N. H., XIII, 1900, p. 169 (Bonda; Cacagualito).

This race has an exceptionally wide distribution in the Tropical Zone, It occurs chiefly in open scattered growths and in ground of this nature ranges upward to the Subtropical Zone. I detect no racial differences in our large series.

Dabeiba, 2; Juntas de Tamaná, 1; Nóvita, 2; Noanamá, 1; San José, 2; Caldas, 1; Las Lomitas, 2; San Antonio, 3; Tumaco, 5; Barbacoas, 1; Puerto Valdivia, 1; La Frijolera, 1; Rio Frio, 1; Cali, 2; Guengüe, 1;

Popayan, 1; Miraflores, 2; Barro Blanco, 1; near San Agustin, 2; Chicoral 3; Andalucia (w. slope, 3000 ft.), 1; Honda, 3; Tenasuca, 2; El Alto de la Paz, 2; Calamar, 3.

(4279) **Thraupis glaucocolpa** *Cab.*

Thraupis glaucocolpa Cab., Mus. Hein., I, 1850, p. 28 (Caracas, Ven.).

La Playa, 2.

(4281) **Thraupis palmarum melanoptera** (*Scl.*).

Tanagra melanoptera Scl., P. Z. S., 1856, p. 235 (n. e. Peru); Wyatt, Ibis, 1871, p. 326 (Bucaramanga; Aguachica; Ocaña).

Tanagra palmarum Scl. & Salv., P. Z. S., 1879, p. 500 (Remedios).

Tanagra palmarum melanoptera Hellm., P. Z. S., 1911, p. 1112 (Loma Hermosa; Nóvita); Allen, Bull. A. M. N. H., XIII, 1900, p. 169 (Cacagualito; Bonda; Minca; Santa Marta).

This species has an exceptionally wide range in Colombia occurring in every fauna of the Tropical Zone from the Pacific coast to the eastern plains though it has not been taken in the Cauca Valley. As Hellmayr has said in Pacific coast specimens the head averages slightly duller, but they can be exactly matched by others from farther east. This constancy of color in birds from regions so widely separated and so different in climatic conditions, renders all the more surprising the fact that in western Ecuador a distinct form (*T. p. violarvata* Berl.) of this bird should be found.

Dabeiba, 1; Nóvita, 1; Noanamá, 1; San José, 2; Los Cisneros, 1; Puerto Valdivia, 1; La Frijolera, 1; Andalucia, (w. slope, 3000 ft.), 1; Subia, 3; Chicoral, 1; Puerto Berrio, 1; Turbaco, 1; Quetame, 2; Buena Vista, 2; Villavicencio, 1; Barrigon, 1; Florencia, 2; La Morelia, 2.

(4289) **Sporathraupis cyanocephala auricrissa** (*Scl.*).

Dubusia auricrissa Scl., P. Z. S., 1855, p. 227 (Bogotá).

Tanagra auricrissa Wyatt, Ibis, 1871, p. 326 (5000–8000 ft. Alto; forest between Ocaña and Bucaramanga).

Tanagra cyanocephala Scl. & Salv., P. Z. S., 1879, p. 501 (Retiro; St. Elena).

Common in the Subtropical Zone of all three ranges. Our specimens present no racial variation.

Nóvita Trail (7200 ft.), 1; Popayan, 1; Cerro Munchique, 11; La Florida, 2; Cocal, 1; La Sierra, 3; Salento, 2; Sta. Elena, 9; Barro Blanco, 2; El Eden, 7; Aguadita, 1; El Roble, 1; Subia, 1; Palo Hueco, 2.

(4293) **Ramphocelus nigrogularis** (*Spix*).

Tanagra nigrogularis Spix, Av. Bras., II, 1825, p. 35, pl. 47 ("Ad flumen Solimoens").

Five specimens taken by Miller at La Morelia add this species to the recorded avifauna of Colombia.

La Morelia, 5.

(4294) **Ramphocelus dimidiatus dimidiatus** *Lafr.*

Ramphocœlus dimidiatus Lafr., Mag. Zool., 1837, pl. 81 (Carthagena, Col.); Cass., Proc. Acad. N. S. Phila., 1860, p. 141 (Turbo); Wyatt, Ibis, 1871, p. 326 (Bucaramanga region up to 7000 ft.); Scl. & Salv., P. Z. S., 1879, p. 501 (Antioquia; Remedios; Neché); Robinson, Flying Trip, 1895, p. 161 (R. Magdalena; Guaduas); Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ambalema; Ibagüe); Allen, Bull. A. M. N. H., XIII, 1900, p. 168 (Cacagualito; San Antonio; Santa Marta; Pueblo Viejo; Palomina; San Miguel).

An abundant Tropical Zone bird which has ascended the Atrato Valley to Quibdó, the Cauca Valley at least as far as Cali, and from this point has doubtless reached the arid pocket on the western slope of the Western Andes at Caldas. In the Magdalena Valley it is found to the very head of the valley at San Agustin where the semi-arid Tropical Zone reaches an altitude of 5000 feet. Our series of seventy specimens includes essentially topotypical examples from the lower Magdalena, with which the other birds in the series practically agree; though specimens from the upper Magdalena Valley are slightly larger and have the throat and interscapular region somewhat darker.

Specimens from La Chorrera, western Panama, have slightly longer tails but agree minutely in color with Colombian birds.

Quibdó, 4; Bagado, 2; Caldas, 2; Puerto Valdivia, 4; La Frijolera, 2; Rio Frio, 5; La Manuelita, 1; Cali, 5; San Agustin, 5; La Candela, 1; Andalucia (w. slope, 3000 ft.), 4; Chicoral, 8; Honda, 1; El Alto de la Paz, 2; Tenasuca, 2; Puerto Berrio, 3; Varrud, 1; Algodonal, 5.

(4297) **Ramphocelus carbo carbo** (*Pall.*).

Lanius carbo Pall., Vroeg's Cat. Rais. Adumb., 1764, p. 2 (Surinam).

Specimens from La Morelia and Florencia and the slopes above at an altitude of 2000 ft. agree with others from Napo, Santarem and Cayenne, and are evidently to be referred to this form. They are very close to but slightly darker than others from Suapure on the Caura River, Venezuela.

E. slope above Florencia (2000 ft.), 1; Florencia, 7; La Morelia, 4.

(4297*a*) **Ramphocelus carbo unicolor** *Scl.*

Ramphocelus unicolor Scl., P. Z. S., 1856, p. 128 (Bogotá).
Rhamphocelus jacapa Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Villavicencio; San Martin).

Common at Villavicencio and upward to Buena Vista and Monteredondo in the Eastern Andes. This form, recognized by von Berlepsch (Rev. Tanag.) but not by Brabourne and Chubb may readily be distinguished from other members of the group by its comparatively uniform coloring, the abdomen and back being but slightly darker than the breast.

Buena Vista, 7; Villavicencio, 3.

(4303) **Ramphocelus flammigerus** (*Jard. & Selb.*).

Ramphopis flamigerus Jard. & Selb., Ills. Orn., III, 1835, pl. 131 ("some part of district of Columbia River"; Berl., Rev. Tanag. substitutes Antioquia, Col.); Scl. & Salv., P. Z. S., 1879, p. 501 (Medellin).

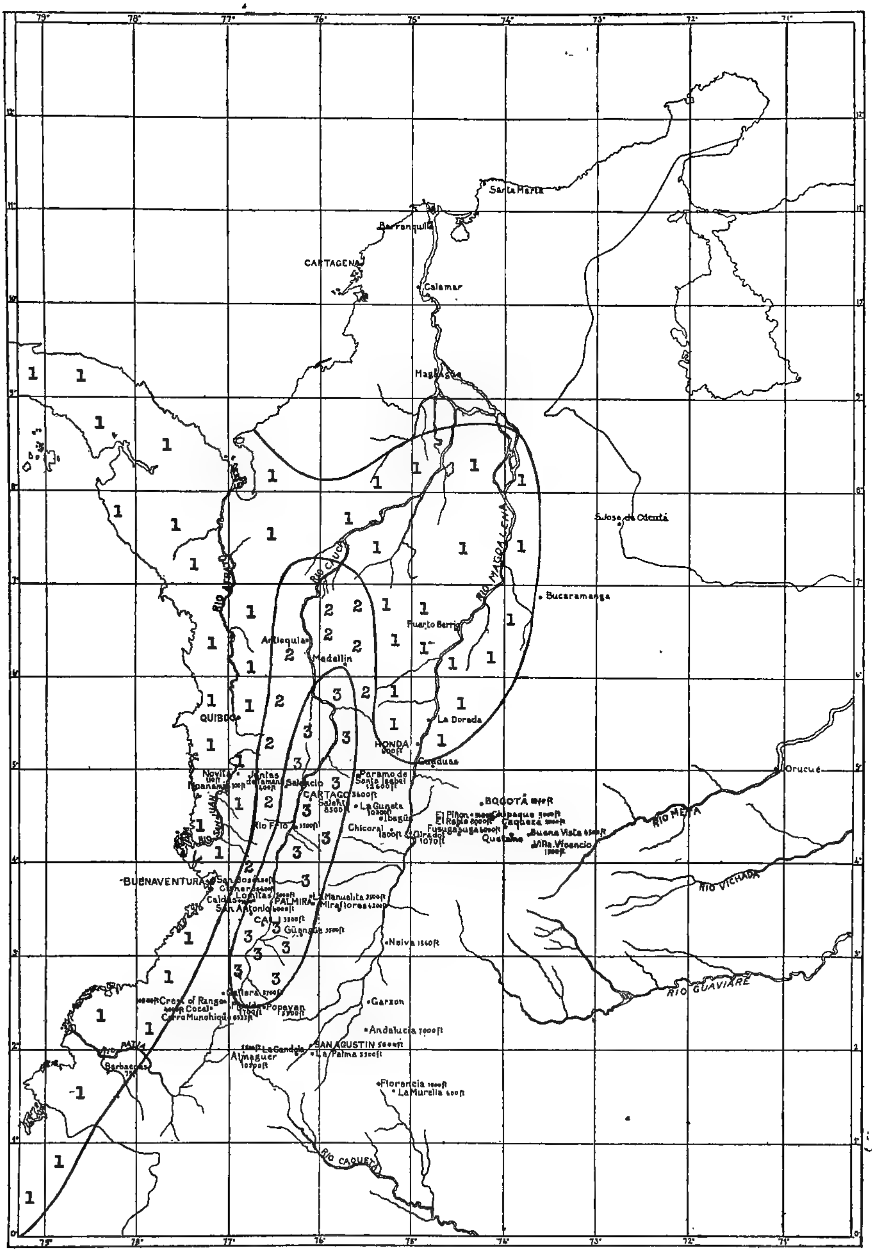
This species appears to be confined to the Cauca Valley and slopes of the adjoining mountains up to the lower border of the Subtropical Zone, from Popayan north to the vicinity of Medellin. All the specimens from the Cauca Valley region proper, that is south of Rio Frio, have the rump intense flame-scarlet in the male and orange-chrome in the female. The males therefore resemble in color the males of *R. passerini* though the females of these two species are quite unlike. This evidently represents the extreme development of this type of color. It is not reached by any one of nine males from the vicinity of Medellin though the most highly colored specimens in this series are nearer to it than to the orange-rumped bird known as *R. chrysonotus*. To the westward, also, over the San Antonio Pass, *flammigerus* passes into *chrysonotus* under conditions which, as stated below, induce the belief that *chrysonotus* is a hybrid between *flammigerus* and *icteronotus*.

San Antonio (e. slope?), 2 ♂♂, 1 ♀; Cali, 4 ♂♂, 2 ♀♀; La Manuelita, 2 ♂♂; Miraflores, 2 ♂♂, 1 ♀; Guengüe, 1 ♂, 1 ♀; Popayan, 1 juv.; Rio Frio, 2 ♂♂, 1 ♀; Salento, 2 ♂♂, 2 ♀♀; Salencio, 1 ♂.

(4304) **Ramphocelus chrysonotus** *Lafr.*

Ramphocelus chrysonotus Lafr., Rev. Zool., 1853, p. 246 (Juntas = Los Cisneros, Col., *cf.* Berl., Rev. Tanag., p. 1061).

This puzzling form appears to occupy an area connecting the ranges of *R. icteronotus* and *R. flammigerus* west and north of the Cauca Valley, and in



79°
78°
77°
76°
75°
74°
73°
72°
71°
Santa Marta
Barranquilla
CARTAGENA
Calamar
Magangue
S. Jose de Cúcutá
Bucaramanga
RIO ATRATO
RIO CAUCA
RIO MAGDALENA
Antioquia
Medellin
Puerto Berrio
La Dorada
HONDA
Caguas
QUIBDO
Novita
Juntas de Tamaná
Salencio
Paramo de Santa Isabel
CARTAGO
La Guneta
Ibagué
Rio Frio
Chicoral
Girardot
BOGOTÁ
El Piñon
El Roble
Chipaque
Caqueza
Fusugasuga
Quetame
Buena Vista
Villa Vicencio
Orucué
RIO META
RIO VICHADA
BUENAVENTURA
San José
Cisneros
Caldas
Lomitas
PALMIRA
La Manuelita
Miraflores
San Antonio
CALI
Güengüe
Neiva
RIO GUAVIARE
Gallera
Crest of Range
Cocal
Cerro Munchique
Popayan
Garzon
Andalucia
La Candela
Almaguer
SAN AGUSTIN
La Palma
PATIA
Barbacoas
Florencia
La Murelia
RIO CAQUETA
RIO SAN JUAN
1
2
3

Fig. 21. A probable case of Hybridism.

1. Range of *Ramphocelus icteronotus*.
2. Range of *Ramphocelus chrysonotus* and intergrades between Nos. 1 and 3.
3. Range of *Ramphocelus flammigerus*.

Nos. 1 and 2 are believed to intergrade by hybridization, producing No. 3.

my opinion is a hybrid between these species. This belief is based chiefly on the occurrence at the same place of specimens some of which are nearest *flammigerus* and others nearest *icteronotus*, and these two sets of specimens are consequently too unlike each other to be the product of the same environment. For example, the rump in males from Caldas in the arid upper Dagua Valley, and within a short distance of the type-locality of *chrysonotus*, varies from cadmium-yellow to orange-chrome, while one of the two females has the rump light cadmium the underparts lemon-chrome, deeper but with no red on the breast or crissum, and the other has the rump orange-chrome the underparts deep lemon-chrome with breast and crissum strongly washed with cadmium-orange. The rump in ten males from the vicinity of Medellin, presented to us by Francisco Escobar, varies from cadmium-yellow to the flame-scarlet of *flammigerus*. It is true that these intergrades between *icteronotus* and *flammigerus* occupy ground of a different character from that frequented by the former, which seems confined to the heavily forested Pacific-Magdalena region, while our specimens of *chrysonotus* come from the more open arid country lying between Cisneros and San Antonio and about Medellin. This, however, is the type of country frequented by *flammigerus*.

Caldas, 3 ♂♂, 2 ♀♀; Las Lomitas, 1 ♂, 1 ♀; San Antonio (w. slope?), 1 ♂; vicinity of Medellin, 2 ♂♂, 2 ♀♀; 3 ♂♂ int. toward *flammigerus*.

(4305) **Ramphocelus icteronotus** *Bonap.*

Ramphocelus icteronotus Bonap., P. Z. S., 1837, p. 121 (locality unknown; Berl., Rev. Tanag., proposes w. Ecuador); Cass., Proc. Acad. N. S. Phila., 1860, p. 141 (Turbo; R. Atrato; R. Truando); Scl. & Salv., P. Z. S., 1879, p. 501 (Remedios; Neché); Robinson, Flying Trip, 1895, p. 161 (Puerto Berrio); Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ibagüe); Hellm., P. Z. S., 1911, p. 1112 (Guineo; Nóvita; Noanamá; Rio Cajon; San Joaquim).

Common in the humid Tropical Zone of the entire Pacific coast and eastward through Antioquia to the Magdalena, occasionally reaching the Subtropical Zone. It was not found in the Cauca Valley where it is apparently replaced by *R. flammigerus*.

Among the thirty-three males in the specimens below recorded, only one, taken at Dabeiba with other typical males, shows an approach toward *R. chrysonotus*. In this specimen the rump is somewhat deeper yellow than usual and scattered through it are numerous orange-tipped feathers producing a patchy appearance.

Alto Bonito, 5; Dabeiba, 3; Quibdó, 1; Bagado, 6; Nóvita Trail (1600–1800 ft.), 3; Juntas de Tamaná, 5; Nóvita, 1; Noanamá, 1; Buenaventura, 4; San José, 7; Gallera, (5700 ft.), 1; Cerro Munchique (6000 ft.), 1; Tumaco, 2; Barbacoas, 5; Puerto Valdivia, 1; La Frijolera, 1; Barro Blanco, 1; w. of Honda, 4.

(4306) **Calochætes coccineus** (*Scl.*).

Euchætes coccineus Scl., P. Z. S., 1858, p. 73, pl. 132, fig. 1 (Rio Napo, Ec.).

An adult male collected by Miller on the eastern slope of the Eastern Andes below Andalucia (2000 ft.) adds this species to the known fauna of Colombia.

Below Andalucia, 1.

(4307) **Piranga rubra rubra** (*Linn.*).

Fringilla rubra Linn., Syst. Nat. I, 1758, p. 181 (Virginia or Carolina).

Pyranga æstiva Wyatt, Ibis, 1871, p. 326 (Herradura; Cocuta Valley; Canta).

Pyranga rubra Scl. & Salv., P. Z. S., 1879, p. 501 (Remedios).

Piranga rubra Stone, Proc. Acad. N. S. Phila., 1899, p. 308, (Honda); Allen, Bull. A. M. N. H., XIII, 1900, p. 168 (Bonda; Oñaca; Valparaiso).

Piranga rubra rubra Hellm., P. Z. S., 1911, p. 1113 (Noanamá; Rio Cajon; Pueblo Rico).

Found throughout the greater part of the country in which we have collected, ranging from sea-level to 9000 ft.

A male taken at El Consuelo, February 6, and another at Buenavista, March 3, are undergoing a complete molt from the olive-yellow, first winter plumage to the red, first nuptial; both wings and tail as well as body feathers are being renewed. The dates of capture range from October 21 to March 21.

Alto Bonito, 1, Feb. 16; Dabeiba, 4, Feb. 12–14; Bagado, 2, Oct. 28; Noanamá, 3, Dec. 29–Jan. 1; Puerto Valdivia, 3, Dec. 24–26; La Frijolera, 1, Jan. 4; Rio Frio, 1, Dec. 1; San Antonio, 1, Feb. 6; Salento, 2, Oct. 31, Nov. 8; Sta. Elena, 4, Nov. 15–23; El Eden, 2, Oct. 18, 21; Honda, 5, Feb. 3–8; Puerto Berrio, 1, Jan. 30; Malena, 1, Mch. 10; Buena Vista, 4, Mch. 3–15.

(4307*a*) **Piranga testacea testacea** *Scl. & Salv.*

Pyranga testacea Scl. & Salv., P. Z. S., 1868, p. 388 (Chitra, Veragua); *Ibid.*, 1879, p. 502 (Concordia; Medellin).

Six males and a female from the Subtropical Zone of the Western Andes and western slope of the Central Andes agree with Panama specimens and differ materially from *P. t. faceta* in their darker coloration, larger size and much larger bill. We have also six males of this form from Ecuador where, at Esmeraldas, it reaches sea-level.

San Antonio, 1; Cocal, 1; Popayan, 2; La Sierra, 3.

(4313) **Piranga leucoptera ardens** (*Tsch.*).

Phœnisoma ardens Tschudi, Arch. für Natürg., 1844, I, p. 287 (Cen. Peru).
Pyranga ardens Wyatt, Ibis, 1871, p. 326 (Canuto).

Miraflores, 1; Ricaurte, 3.

(4315) **Piranga rubriceps** *Gray*.

Pyranga rubriceps Gray, Gen. Bds., II, 1849, p. 364, pl. 89 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 502 (Concordia; Medellin).

Cerro Munchique, 1; Laguneta, 2.

(4319) **Chlorothraupis olivacea** (*Cass.*).

Orthogonys olivaceus Cass., Proc. Acad. N. S. Phila., 1860, p. 140 (Mts. R. Truando, Col.); Scl. & Salv., P. Z. S., 1879, p. 502 (Remedios; Neché).
Chlorothraupis olivacea Hellm., P. Z. S., 1911, p. 1114 (Sipi; R. Cajon; Nóvita; S. Joaquim).

Common in the Tropical Zone of the Pacific coast and eastward into Antioquia.

Alto Bonito, 5; Bagado, 2; Baudo, 3; Nóvita Trail (2000 ft.) 1; Juntas de Tamaná, 2; Nóvita, 1; Noanamá, 1; Buenaventura, 2; San José, 5; Barbacoas, 6; Ricaurte, 1.

(4320) **Chlorothraupis stolzmanni** (*Berl. & Tacz.*).

Phœnicothraupis stolzmanni Berl. & Tacz., P. Z. S. 1883, p. 546 (Chimbo, w. Ecuador).

Three specimens from Buenavista, Nariño, agree with the description of this species of which I have seen no other examples.

Buenavista, Nariño, 3.

618

(4327) **Phœnicothraupis cristata** *Lawr.*

Phœnicothraupis cristata Lawr., Ann. Lyc. N. H. N. Y., XI, 1874, p. 70 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 502 (Frontino); Hellm., P. Z. S., 1911, p. 1113 (La Selva; Pueblo Rico; Loma Hermosa).

Our eleven specimens of this species are all from the Subtropical Zone of the Western Andes. The type, however, with which they agree, appears to be a 'Bogotá' skin and indicates therefore that this species occurs to the eastward of the Western Andes.

Peque, 1; Nóvita Trail, (6000 ft.), 1; San Antonio, 2; Rio Lima (Batty), 4; Cocal, 1; Cerro Munchique (6000 ft.), 3.

(4328) **Phœnicothraupis gutturalis** *Scl.*

Phœnicothraupis gutturalis Scl., Ann. Nat. Hist. (2), XIII, 1854, p. 25 (Bogotá); Wyatt, Ibis, 1871, p. 327 (Naranjo); Scl. & Salv., P. Z. S., 1879, p. 502 (Remedios).

This strongly marked species is known only from the Tropical Zone of the Magdalena Valley. Our single specimen was collected by Mrs. Kerr.

West of Honda (2800 ft.), 1.

(4332) **Heterospingus xanthopygius** (*Scl.*).

Tachyphonus xanthopygius Scl., P. Z. S., 1854, p. 158, pl. 69 (Bogotá); Cass., Proc. Acad. N. S. Phila., 1860, p. 142 (R. Truando); Scl. & Salv., P. Z. S., 1879, p. 503 (Remedios).

Heterospingus xanthopygius Hellm., P. Z. S., 1911, p. 1114 (Nóvita).

Our specimens together with the records of the occurrence of this species indicate that it occupies the Tropical Zone of the Pacific coast south into Ecuador and east through Antioquia to the Magdalena Valley (where so-called Bogotá specimens are doubtless secured).

Alto Bonito, 2; San José, 1; Cachipay (Magdalena Valley), 1.

(4333) **Tachyphonus rufus** (*Bodd.*).

Tangara rufa Bodd., Tabl. Pl. Enl., 1783, p. 44 (Cayenne).

Tachyphonus melaleucus Wyatt, Ibis, 1871, p. 327 (Ocaña; Bucaramanga); Scl. & Salv., P. Z. S., 1879, p. 503 (Medellin; Remedios); Robinson, Flying Trip, 1895, p. 101 (Guaduas).

Tachyphonus rufus Allen, Bull. A. M. N. H., XIII, 1900, p. 168 (Pueblo Viejo and Palomina).

This abundant, wide-ranging bird of forest and scrub-growth is in the main an inhabitant of the Subtropical Zone, but it is also found in the zone below.

Dabeiba, 6; Caldas, 2; Las Lomitas, 5; San Antonio, 4; Gallera, 1; Ricaurte, 7; Salencio, 1; Rio Frio, 1; Cali, 1; Miraflores, 4; Barro Blanco, 1; La Palma, 4; La Candela, 4; San Agustin, 2; Andalucia, 4; Fusugasugá, 1; Aguadita, 1; Palo Hueco, 1; Buena Vista, 1.

(4334) **Tachyphonus luctuosus** *Lafr. & d'Orb.*

Tachyphonus luctuosus LAFR. & d'ORB., Syn. Av., 1, 1837, p. 29 (Guarayos, Bolivia); CASS., Proc. Acad. N. S. Phila., 1860, p. 141 (Truando); SCL. & SALV., P. Z. S., 1879, p. 503 (Remedios; Neché).

Of general distribution in the Tropical Zone.

Dabeiba, 3; Guengüe, 1; Rio Frio, 5; Chicoral, 2; Opon, 1; La Morelia, 1.

(4340) **Tachyphonus surinamus surinamus** (*Linn.*).

Turdus surinamus LINN., Syst. Nat., I, 1766, p. 297 (Surinam).

Specimens from Villavicencio and La Morelia while slightly darker than those from Cayenne and Suapure, Venezuela, are unquestionably to be referred to that form rather than to the east Ecuadorian *napensis,* the types of which are in the American Museum. Lawrence (Ann. Lyc. N. H. VIII, 1864, p. 42, wrote the word "type" on two specimens of *napensis* but neither is specifically designated in his description. I select therefore Am. Mus. No. 40945 "Napo, ♂, W. E. Moore" as the type of this form. The label on this bird appears to be older, the ink more faded than that on the second specimen, indicating that it was acquired first. This bird has the rump tawny-ochraceous as compared with cinnamon-buff in true *surinamus.*

Villavicencio, 1; La Morelia, 3.

(4346) **Tachyphonus delattrii** *Lafr.*

Tachyphonus delatrii LAFR., Rev. Zool., X, 1847, p. 72 (Buenaventura, w. Col.).

Tachyphonus de Lattrei CASS., Proc. Acad. N. S. Phila., 1860, p. 142 (Falls Truando).

Tachyphonus delattrii SCL. & SALV., P. Z. S., 1879, p. 503 (Remedios; Neché); HELLM., P. Z. S., 1911, p. 1115 (Buenaventura; Noanamá; Rio Cajon; Sipi).

Abundant in Tropical Zone of the Pacific coast and Antioquia.

Alto Bonito, 3; Bagado, 1; Andagueda, 1; Baudo, 2; Juntas de Tamaná, 5; Nóvita, 5; Noanamá, 2; San José, 7; Barbacoas, 7; Puerto Valdivia, 6.

(4347) **Creurgops verticalis** *Scl.*

Creurgops verticalis SCL., P. Z. S., 1858, p. 73, pl. cxxii (Rio Napo, Ecuador); SCL. & SALV., *Ibid.*, 1879, p. 503 (Sta. Elena).

Our specimens are all from the Subtropical Zone of the Western and Central Andes; there appears to be no record for the Eastern Andes.

San Antonio, 3; Salento, 1; Sta. Elena, 3; El Eden, 1; La Palma, 2; La Candela, 4.

(4352) **Eucometis cristata cristata** (*Du Bus*).

Pipilopsis cristata Du Bus, Bull. Acad. Brux., XXII, 1855, p. 153 (Colombia).
Eucometis cristata Cass., Proc. Acad. N. S. Phila., 1860, p. 141 (R. Truando); Allen, Bull. A. M. N. H., XIII, 1900, p. 168 (Bonda; Onaca; Cacagualito).

Three specimens, all taken at El Consuelo, in the Eastern Andes above Honda.

El Consuelo, 3.

(4354) **Mitrospingus cassini** (*Lawr.*).

Tachyphonus? Cass., Proc. Acad. N. S. Phila., 1860, p. 142 (Falls Truando).
Tachyphonus cassinii Lawr., Ann. Lyc. N. H. N. Y., VII, 1861, p. 297 (Lion Hill, Panama).
Eucometis cassini Scl. & Salv., P. Z. S., 1879, p. 503 (Neché).
Mitrospingus cassini Hellm., P. Z. S., 1911, p. 116 (Condoto).

Common in the Tropical Zone of the Pacific coast south into Ecuador and east into Antioquia.

Salaqui, 1; Alto Bonito, 4; Bagado, 1; Juntas de Tamaná, 3; San José, 5; Barbacoas, 6.

(4365) **Erythrothlypis salmoni** (*Scl.*).

Dacnis salmoni Scl., Cat. Bds. B. M., XI, 1886, p. 27, pl. ii, fig. 2, ♀ (Remedios).
Nemosia rosenbergi Roths., Bull. B. O. C., XII, 1897, p. vi (Cachabi, n. w. Ecuador); Hart., Nov. Zool., V, 1898, p. 483, pl. ii, fig. 1, ♂.
Hemithraupis salmoni Hellm., P. Z. S., 1911, p. 1116 (Nóvita; Sipi).

Inhabits the Tropical Zone of the Pacific coast, southward into Ecuador, north and east to the Magdalena Valley.

San José, 4; Buenavista, Nariño, 3.

(4373) **Hemithraupis peruana** *Bonap.*

Hemithraupis peruana Bonap., Rev. Zool., 1851, p. 173 (Peru).

A male from Florencia agrees with Napo specimens. I have also a female of some species of this group from La Frijolera.

Florencia, 1.

(4378) **Hemithraupis guira guirina** (*Scl.*).

Nemosia guirina Scl., P. Z. S., 1856, p. 110 (Bogotá).

La Frijolera, 1; Puerto Valdivia, 1; Rio Frio, 2; w. of Honda, 1; La Candela, 1.

(4389) **Sericossypha albocristata** (*Lafr.*).

Tangara albo-cristatus Lafr., Rev. Zool., 1843, p. 132 (Colombia).

Our two specimens are from Almaguer in the Temperate Zone of the Central Andes.

Almaguer, 2.

(4390*a*) **Chlorospingus albitempora nigriceps** *Chapm.*

Chlorospingus albitempora nigriceps Chapm., Bull. A. M. N. H., XXXI, 1912, p. 166 (Miraflores, Cen. Andes, Col.).

? *Chlorospingus albitemporalis* Wyatt, Ibis, 1871, p. 327 (Alto; forests between Ocaña and Bucaramanga).

Char. subsp.— Most nearly related to *Chlorospingus albitempora venezuelanus* (Berl.) of Venezuela, but throat paler fulvous and with no postocular mark.

Known only from the Subtropical Zone on both slopes of the Central Andes and the western slope of the Eastern Andes.

Our collections now contain twenty specimens of this form, only one of which, a male from Sta. Elena, Antioquia, has any trace of a white postocular mark. This specimen has four small white feathers behind the right eye and none back of the left. Unfortunately only one of our specimens is from the Eastern Andes, but in this, a male from Andalucia, there is no trace of a white postocular mark. So far as our material goes, therefore, it indicates the absence of a postocular mark in the Colombian form of this species. If this be true Lafresnaye's description of *albitempora* (Rev. Zool. 1848, p. 12) was evidently not based on a Colombian bird, as stated, and the name *albitempora* is doubtless therefore applicable to one of the forms now ranked as subspecies of it.

Miraflores, 2; Salento, 1; Sta. Elena, 9; Rio Toché, 4; El Eden, 2; La Candela, 1; Andalucia (7000 ft.), 1.

(4394) **Chlorospingus flavipectus** (*Lafr.*).

Arremon flavopectus Lafr., Rev. Zool., 1840, p. 227 (Bogotá).

Chlorospingus flavipectus Scl. & Salv., P. Z. S., 1879, p. 503 (Retiro; Concordia; Sta. Elena).

Taken only at El Roble in the Subtropical Zone of the Eastern Andes above Fusugasugá. Comparison of three specimens collected at that locality with six old 'Bogotá' skins shows that the latter have evidently undergone a change in color the whole plumage being browner in tone. The difference between new and old skins is greater than that which exists between many subspecies, and if the two sets of birds were from different localities, might readily be considered racial.

El Roble, 3.

(4395) **Chlorospingus canigularis** (*Lafr.*).

Tachyphonus canigularis Lafr., Rev. Zool., 1848, p. 11 (Bogotá).

Of general distribution in the Subtropical Zone but apparently not common in the more northern parts of the Western Andes. An old 'Bogotá' skin shows much the same difference from these fresh specimens as exists in old skins of *Chlorospingus flavipectus.* Birds from Subia and Fusugasugá are topotypical and the remaining specimens in the series agree with them.

San Antonio, 2; Cerro Munchique, 3; Gallera, 1; La Florida, 2; Miraflores, 5; Salento, 4; La Candela, 3; near San Agustin, 1; Fusugasugá, 9; Subia, 5.

(4397) **Chlorospingus flavigularis flavigularis** (*Scl.*).

Pipilopsis flavigularis Scl., Rev. Zool., 1852, p. 8 (New Grenada).

Inhabits the Subtropical Zone of the Eastern and Central Andes. On the eastern slope of the Eastern Andes it ranges southward at least to southeastern Ecuador whence we have a typical specimen from Zamora. Specimens from La Frijolera northwest Colombia are also typical, but those from La Palma and Andalucia have the breast washed with brownish somewhat as in *marginatus.* The throat is orange in four specimens and in the same number yellow.

La Frijolera, 2; La Palma, 2; Andalucia (7000 ft.), 1; Monteredondo, 1; Buena Vista, 1.

(4397*a*) **Chlorospingus flavigularis marginatus** *Chapm.*

Chlorospingus flavigularis marginatus Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 189 (Buenavista, Nariño, Col.).

Char. subsp.— Similar to *Chlorospingus flavigularis hypophæus* but breast and sides light olive-gray rather than buffy brown, back greener; resembling *C. f. flavigularis* Scl. but wings and tail shorter, breast and sides browner, flanks more olivaceous, lores grayer, wing-quills margined internally with buff increasing in amount from without inwardly.

The relationships of this bird appear to be with the Central American form rather than with *C. f. flavigularis.* Specimens of the latter from the head of the Subtropical Zone at the head of the Magdalena River region, however, show in their browner underparts an affinity with *marginatus* though it is not probable that intergradation occurs in this direction. Specimens of *marginatus* from Naranjo, near Guayaquil, indicate that it occupies the entire humid Tropical Zone of Western Ecuador. North of Cocal, southwestern Colombia, it is unknown, nor has any form of this species been found in the Tropical Zone of the Pacific coast of Colombia north of the point mentioned. A specimen from La Frijolera on the western slope of the Central Andes, above the lower Cauca River, is typical of *flavigularis*. Between the ranges of *marginatus* and that of its Panama representative, *hypophaeus*, there appears therefore to be a hiatus. The case is in a large measure paralleled by that of other species, particularly *Arremonops conirostris*.

Cocal, 1; Ricaurte, 1; Buenavista, Nariño, 5.

(4400) **Chlorospingus semifuscus** *Scl. & Salv.*

Chlorospingus semifuscus Scl. & Salv., Nomen. Av. Neotr., 1873, p. 157 ("Quito").

Taken in the Subtropical Zone of the Western Andes. An unsexed, possibly immature specimen from the Nóvita Trail (7200 ft.) is smaller than either of two from Gualea, Ecuador and has an olive-green band on the breast. The species has not before been recorded from Colombia.

Nóvita Trail, 1; Cocal (6000 ft.), 4; (4000 ft.), 4.

(4402) **Hemispingus atropileus** (*Lafr.*).

Arremon atro-pileus Lafr., Rev. Zool., 1842, p. 335 ("Bolivia" = Bogotá).
Chlorospingus atripileus Scl. & Salv., P. Z. S., 1879, p. 504 (Medellin; Sta. Elena).

A species of the Temperate Zone in all three ranges, descending as low as 6000 feet on the western slope of the Western Andes.

Andes w. of Popayan (10,340 ft.), 1; Cocal (6000 ft.), 2; above Salento, 2; Laguneta, 3; Choachi, 1.

(4406) **Hemispingus rubrirostris** (*Lafr.*).

Arremon rubrirostris Lafr., Rev. Zool., 1840, p. 227 (Bogotá).
Chlorospingus rubrirostris Scl. & Salv., P. Z. S., 1879, p. 504 (Sta. Elena).

Found only in the Temperate Zone and upper part of the Subtropical Zone in all three ranges of the Andes. The El Roble specimen is topotypical; the others agree with it in color but are slightly larger. Old 'Bogotá' skins have the gray areas brown, the green more olivaceous, the yellow, deeper, than in freshly collected ones.

Paramillo Trail (11,000 ft.), 1; Almaguer, 1; above Salento (9000 ft.), 4; Laguneta, 3; Sta. Elena, 3; El Roble, 1.

(4408) **Hemispingus superciliaris superciliaris** (*Lafr.*).

Arremon superciliaris LAFR., Rev. Zool., 1840, p. 227 (Bogotá).

Apparently restricted to the Eastern Andes.

Palo Hueco, 1; Cundinamarca, 1.

(4409) **Hemispingus superciliaris nigrifrons** (*Lawr.*).

Chlorospingus nigrifrons LAWR., Ibis, 1875, p. 384 (Ecuador).

Inhabits the Temperate Zone of the Central Andes. All the localities mentioned below are represented by typical specimens and both from Valle de las Pappas and Laguneta we have intermediates between this form and *H. s. superciliaris*.

Valle de las Pappas, 4; Laguneta, 1; Santa Isabel, 1.

(4412*a*) **Hemispingus frontalis oleagineus** (*Scl.*).

Chlorospingus oleagineus SCL., P. Z. S., 1862, p. 110 ('Bogotá').
Hemispingus frontalis oleagineus BERL., Rev. Tanag., Int. Orn. Cong., 1910, p. 1094.

Found in the Subtropical Zone of all three ranges. I have no Peruvian or Venezuelan birds for comparison and accept von Berlepsch as authority for the name of the Colombian bird.

Gallera, 2; Salento, 3; Sta. Elena, 3; Rio Toché, 1; El Eden, 2; Aguadita (above Fusugasugá), 4; Subia, 4.

(4417) **Hemispingus melanotis** (*Scl.*).

Chlorospingus melanotis SCL., P. Z. S., 1854, p. 157, pl. 68 (Bogotá).

Inhabits the Subtropical Zone of the Central and Eastern Andes.

Above Salento (alt. 9000 ft.), 1; Sta. Elena, 2; Fusugasugá, 1; El Roble, 1.

(4420) **Pseudospingus verticalis** (*Lafr.*).

Nemosia verticalis LAFR., Rev. Zool., 1840, p. 227 (Bogotá).

Our specimens are all from the Temperate Zone of the Central Andes.
Almaguer, 5; Laguneta, 1; Santa Isabel, 2.

(4422) **Urothraupis stolzmanni** *Berl. & Stolz.*

Urothraupis stolzmanni BERL. & STOLZ., P. Z. S., 1885, p. 83, pl. viii (San Rafael, Ecuador).

A specimen from Santa Isabel (12,000 ft.) at the upper border of the Temperate Zone, near the northern end of the Central Andes, agrees with the plate accompanying the original description and introduces this species into the known Colombian avifaunas.

Sta. Isabel, 1.

(4426) **Psittospiza riefferi riefferi** (*Boiss.*).

Tanagra riefferi BOISS., Rev. Zool., 1840, p. 4 (Bogotá).

Psittospiza riefferi SCL. & SALV., P. Z. S., 1879, p. 505 (Envigado; Concordia; Medellin; Remedios; Sta. Elena).

Psittospiza riefferii riefferii HELLM., P. Z. S., 1911, p. 1120 (Tatamá Mt.).

Occurs in all three ranges and is confined chiefly to the Temperate Zone.

Paramillo Trail (11000 ft.), 1; Andes w. of Popayan, 5; Cerro Munchique, 3; Cocal (4000 ft.), 2; (6000 ft.), 2; Almaguer, 5; Laguneta, 10; Sta. Elena, 2; El Roble, 1; El Piñon, 1.

(4431) **Oreothraupis arremonops** (*Jard.*).

Saltator arremonops JARD., Edinb. N. Phil. Journ., Ser. 2, II, 1855, p. 119 (Ecuador).

The capture by Richardson and Miller of two specimens of this species at Cocal (alt. 6000 ft.) in the Western Andes, extends its known range into Colombia.

Cocal, 2.

(4433) **Cissopis leveriana minor** (*Tsch.*).

Cissopis minor TSCH., Faun. Per., Aves, 1846, p. 211 (Peru).

Common in the Tropical Zone at the eastern base of the Eastern Andes, ascending to 4500 feet at Buena Vista.

Florencia, 9; slopes above Florencia (2000 ft.), 1; La Morelia, 2; Villavicencio, 4; Buena Vista, 1.

(4437) **Schistochlamys atra** (*Gmel.*).

Tanagra atra GMEL., Syst. Nat., I, 1789, p. 898 (Guiana).
Schistochlamys atra ALLEN, Bull. A. M. N. H., XIII, 1900, p. 166 (La Concepcion and San Antonio).

This Tanager, with *Thraupis episcopus leucopterus,* reaches the extreme upper limits of the Tropical Zone of the eastern slope of the Eastern Andes, between Quetame and Cáqueza whence it was found, to Villavicencio. A specimen from near San Agustin, indicates the possible entrance of this Amazonian form into the upper Magdalena Valley over the mountains. There are records, however, for Antioquia and Bucaramanga.

Quetame, 1; Buena Vista, 1; Villavicencio, 6; near San Agustin, 1.

FAMILY ICTERIDÆ. OROPENDOLAS, AMERICAN ORIOLES, GRACKLES, ETC.

(4440) **Zarhynchus wagleri wagleri** (*Gray*).

Cacicus wagleri GRAY, Gen. Bds., II, 1847, p. 342, pl. 85.
Ocyalus wagleri CASS., Proc. Acad. N. S. Phila., 1860, p. 138 (Truando; Nercua); SCL. & SALV., P. Z. S., 1879, p. 508 (Pocane; Remedios).

Inhabits the Tropical Zone of the Pacific coast and eastward into Antioquia. Colombian specimens average less black below and, to a lesser extent, above than two from Costa Rica and five from Honduras, but the character is too inconstant to be used in diagnosis.

Nóvita, 5; Barbacoas, 4; Buenavista, 1; Puerto Valdivia, 7; La Frijolera, 1.

(4443) **Gymnostinops guatimozinus** (*Bonap.*).

Ostinops guatimozinus BONAP., Compt. Rend., XXXVII, 1853, p. 833 (Guaripata, Col.); SCL. & SALV., P. Z. S., 1879, p. 508 (Remedios).
Cassicus guatimozinus CASS., Proc. Acad. N. S. Phila., 1867, p. 71, part (Turbo).
Gymnostinops guatimozinus ROBINSON, Flying Trip, 1895, p. 160 (R. Magdalena).

Inhabits the Tropical Zone in eastern Panama, the lower Atrato Valley, and eastward through Antioquia to the Magdalena Valley. Five specimens from eastern Panama (El Real, Tapaliza, Chepigana) agree with those below recorded.

Alto Bonito, 5; Malena, 1.

(4444) **Gymnostinops yuracares** (*d'Orb. & Lafr.*).

Cassicus yuracares D'ORB. & LAFR., Syn. Av., II, p. 2; Mag. de Zool., 1838, p. 2 (Yuracaris, Bolivia).

Gymnostinops yuracares caurensis TODD, Proc. Biol. Soc. Wash., XXVI, 1913, p. 170 (R. Caura, Venez.).

Occurs in Colombia only in Amazonia. Mr Todd has kindly loaned me a type and topotype of his *Gymnostinops yuracares caurensis* and I find that they can be closely matched by specimens in our collection from Bolivia and western Matto Grosso. There appears to be much variation in this species in the color of the anterior parts of the body, some birds having it analine-yellow, others yellowish olive. In two of the Colombian specimens listed below it is analine-yellow, in a third immature female it is much darker. Two adult males from Napo and a 'Bogotá' skin are analine-yellow. Two males and a female from Jutumpampa, Bolivia, agree with one another and all have the parts in question analine-yellow; but in a male from the lower Beni, Bolivia, and two males from Campo Novo, Matto Grosso, they are dark yellowish olive.

Of the two specimens of "*caurensis*" the type has the anterior areas slightly lighter than in the Beni specimen above-mentioned, while the second Caura specimen resembles the two specimens from Matto Grosso. In one the bill agrees in size with that of Bolivian and Brazilian specimens, in the other it is slightly smaller with the culmen somewhat narrower basally, but the difference is slight and does not impress me as being of diagnostic value. I conclude therefore that the characters attributed to *caurensis* ("darker . . . bill decidedly weaker") are individual rather than racial.

Florencia, 1; La Morelia, 1.

(4445) **Ostinops decumanus** (*Pall.*).

Xanthornus decumanus PALL., Spic. Zool.; Fasc. VI, 1769, p. 1 (Surinam).

Ostinops cristatus CASS., Proc. Acad. N. S. Phila., 1860, p. 138 (Turbo; R. Atrato); WYATT, Ibis, 1871, p. 328 (lower mountain districts, Bucaramanga region).

Ostinops decumanus SCL. & SALV., P. Z. S., 1879, p. 508 (Remedios); ROBINSON, Flying Trip, 1895, p. 160 (R. Magdalena); STONE, Proc. Acad. N. S. Phila., 1899, p. 307 (R. Guali; R. Combeima); ALLEN, Bull. A. M. N. H., XIII, 1900, p. 163 (Onaca).

One of the most conspicuous and characteristic birds of the Tropical Zone. It is found in the Cauca and Magdalena Valleys and Amazonian region but appears to be absent from the Pacific Coast region.

Although like other species of the genus it is an inhabitant of forests, its altitudinal range was not found to extend beyond the upper border of the Tropical Zone, just as the range of *O. salmoni* did not reach below the lower border of the Subtropical Zone. Consequently from our base at Miraflores (alt. 6200 ft.) in the Central Andes, near the junction of these two zones, *decumanus* could be secured by working downward, *salmoni* by going upward, and although found within an hour's journey of one another they were never found together.

Our twenty-two specimens from the Cauca and Magdalena as well as thirteen specimens from Panama (Tapalisa; El Real; Chepigana; Canal Zone; Boqueron, Chiriqui) are uniformly glossy black and agree with six topotypical examples from Paramaribo, Dutch Guiana, four of which have been kindly loaned, and two presented to us by Mr. T. E. Penard.

A male from La Morelia and a female from Florencia have a purplish tinge to the plumage which is more or less margined with deep chestnut. In birds from Trinidad and the Paria Peninsula, this chestnut edging is highly developed on the back and abdominal region, but it is less pronounced in British Guiana birds and is wholly absent on some, and shows but little on other Dutch Guiana specimens which, as said above, closely resemble Colombia and Panama examples.[1]

Peque, 2; La Manuelita, 3; below Miraflores (4500 ft.), 3; Rio Frio, 1; La Palma, 2; near Honda, 7; Algodonal, 1; Opon, 3; Barrigon, 2; Florencia, 1; La Morelia, 1.

(4448) **Ostinops salmoni** *Scl.*

Ostinops salmoni Scl., Ibis, 1883, p. 153, pl. vi (Envigado, Col.); Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (R. Combeima, Nevada del Tolima).

Ostinops atrocastaneus Scl. & Salv., P. Z. S., 1879, p. 509 (Concordia; Envigado; Frontino).

One of the most characteristic species of the Subtropical Zone of the Western Andes and western slope of the Central Andes. While it obviously represents *O. atrocastaneus* of western Ecuador, our most southern specimens of *salmoni* (Gallera; La Sierra) show no perceptible approach toward our most northern specimen of *atrocastaneus* (Gualea), and the characters which separate them are so pronounced that I should not feel warranted in treating them as subspecies without more positive evidence of intergradation than our specimens exhibit.

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[1] These blackbirds have since been described as *Ostinops decumanus melanterus* by W. E. Clyde Todd, from Las Vegas, Santa Marta, Col. (Proc. Biol. Soc. Wash., XXX, 1917, p. 3) but as shown above, Colombian specimens resemble others from Dutch Guiana.

Las Lomitas, 2; San Antonio, 8; Gallera, 1; La Sierra, 1; Miraflores, 3; Salento, 4; Laguneta, 1; La Frijolera, 1.

(4451) **Ostinops alfredi sincipitalis** *Cab.*

Ostinops sincipitalis CAB., J. f. O., 1873, p. 309 (New Grenada).

Apparently restricted to the Subtropical Zone of the western slope of the Eastern Andes.

Aguadita above Fusugasugá, 2; Anolaima, 2.

(4451*a*) **Ostinops alfredi neglectus** *Chapm.*

Ostinops sincipitalis neglectus CHAPM., Bull. Am. Mus. Nat. Hist., XXXIII, 1914, p. 190 (Monteredondo, near Quetame, alt. 5800 ft.).

Char. subsp.— Similar to *O. a. sincipitalis*, but back more olivaceous and much less brownish; the yellow frontal band narrower, and not continued backward in superciliary stripes; the throat less yellow and more nearly the color of the breast.

This form appears to be restricted to the Subtropical Zone of the eastern slope of the Eastern Andes. Since describing it we have received two additional specimens of true *sincipitalis* from Anolaima on the western slope of the Western Andes below Facatativá, and also an adult male of *Ostinops alfredi alfredi*, a species not before represented in our collections, from Zamora, southeastern Ecuador. The Anolaima specimens agree with others from Fusugasugá in having the back much richer chestnut, the forehead broadly yellow and yellow superciliaries well developed, characters in which they differ from *neglectus*.

The two specimens from near the summit of the Eastern Andes (alt. 5000 ft.) below Andalucia, in southeastern Colombia referred to (*l. c.*) as having the frontal band even narrower than in *neglectus* show in this respect an interesting approach toward *alfredi* in which this mark is reduced to the minimum in the group. The Andalucia specimens are further intermediate in having the body more chestnut than the type of *neglectus* while the outer rectrix of the male is olive and therefore like that of *neglectus* and *sincipitalis;* in the female, it is largely yellow on the inner web and thus like that of *alfredi!*

The bill of our single specimen of *alfredi* (an adult male, taken Oct. 28) is basally horn color, the apical half whitish, the mandible being browner than the maxilla, whereas in the Andalucia specimens, and in all other examples of our large series of this group it varies from mustard-yellow to deep chrome. These facts obviously suggest the intergradation of *alfredi* and *sincipitalis* through *neglectus*.

Even more puzzling than these two specimens from 5000 feet is an adult male from an altitude of 2500 feet on the eastern slope above Florencia, which has the yellow bill of *neglectus* and *sincipitalis* but in other respects resembles *angustifrons!* There is no indication of yellow on the forehead or lores, but the underparts, particularly the thighs, are more olive than in *angustifrons*. Possibly this is a hybrid between *angustifrons* and the form of *neglectus* found at Andalucia.

Monteredondo, 1; Andalucia (5000 ft.), 2.

(4453) **Ostinops angustifrons** (*Spix*).

Cassicus angustifrons Spix, Av. Bras., I, 1824, p. 66, pl. lxii ("In confinibus fl. Amazonum").

Two specimens from above Villavicencio (alt. 3000 ft.) where the species is common, are somewhat darker and have the bill slightly stouter and straighter than others from "Napo."

Inhabits the Tropical Zone at the eastern base of the Eastern Andes. As above described, a specimen from above Florencia appears to be a hybrid between this species and the form of *neglectus* found at Andalucia.

Villavicencio, 2; La Morelia, 3; above Florencia (2500 ft.), 1, approaching *neglectus*.

(4454) **Cacicus cela** (*Linn.*).

Oriolus cela Linn., Syst. Nat., I, 1758, p. 191 (Guiana).

Cassicus persicus auct. Allen, Bull. A. M. N. H., XIII, 1900, p. 163 (Cacagualito; Santa Marta).

Inhabits the Tropical Zone east of the Eastern Andes and also the Santa Marta region (see remarks under the following species).

Barrigon, 8; Florencia, 5; La Morelia, 5.

(4456) **Cacicus vitellinus** *Lawr.*

Cassicus vitellinus Lawr., Proc. Acad. N. S. Phila., 1864, p. 107 (Panama).

Cassicus icteronotus Cass., *Ibid.*, 1860, p. 139, (Turbo; delta Atrato).

Cassicus flavicrissus Wyatt, Ibis, 1871, p. 329 (Lake Paturia); Scl. & Salv., P. Z. S., 1879, p. 509 (Remedios); Robinson, Flying Trip, 1895, p. 160 (R. Magdalena).

In Colombia this species is known only from the humid Tropical Zone of the lower Atrato Valley eastward to the Magdalena Valley. In the Santa Marta region and east of the Eastern Andes it is replaced by *Cacicus cela* (= *persicus* auct.) and in western Ecuador by *C. flavicrissus*, but although these three forms are evidently representative of one another the facts at hand indicate that they do not intergrade.

It should be particularly noted that from the Pacific coast region no form of this species has been recorded between the River Salaqui and Esmeraldas. Aside from its larger size, more orange rump, etc., and smaller amount of orange in the wing, *vitellinus* differs from *flavicrissus* in its conspicuously larger bill which, in color, is yellowish ivory or greenish white rather than dark plumbeous paler terminally.

In the extent of orange or yellow in the tail both agree, and differ from *C. cela* in having the outer feathers with essentially the same amount of yellow as the inner ones; while in *cela* this color occupies at least the basal two-thirds of all but the central pair of feathers.

A male from Algodonal, on the lower Magdalena River has the orange areas slightly paler but in other respects agrees with the type of *vitellinus*, while a male from Cacagualito in the Santa Marta region is equally typical of *C. cela*.

R. Salaqui, 1; Algodonal, 1.

(4458) **Cacicus leucorhamphus** (*Bonap.*).

Xanthornus leucorhamphus Bonap., Att. Sc. Ital., 1843, p. 404 (Bogotá).
Cassicus leucorhamphus Scl. & Salv., P. Z. S., 1879, p. 509 (Envigado; Concordia; Sta. Elena).

Inhabits the Temperate Zone of all three ranges descending locally to the upper part of the Subtropical Zone. It appears to be a zonal representative of the *Cacicus cela* group.

Andes w. of Popayan, 1; Almaguer, 3; Laguneta, 8; El Eden, 3; Subia, 2.

(4460*a*) **Cacicus hæmorrhous affinus** *Swains.*

Cassicus affinis Swains., Bds. Brazil, pl. 2.

Reaches the Tropical Zone of Amazonian Colombia from which country it does not appear to have been before recorded. Our specimens agree with others from Guiana. This species may be considered the Tropical Zone ancestor of *C. uropygialis*.

Florencia, 1; La Morelia, 1.

(4463) **Cacicus uropygialis uropygialis** *Lafr.*

Cassicus uropygialis Lafr., Rev. Zool., 1843, p. 290 (Colombia = 'Bogotá'); Scl. & Salv., P. Z. S., 1879, p. 509 (Jerico).

Inhabits the Eastern Andes, westward to the Cauca Valley region southward into Ecuador (chiefly in the Subtropical Zone?).

Rio Lima, Cauca region, 2; Los Tambos, Cauca region, 1; Salento, 1; Andalucia (w. slope, 5000 ft.), 2; Fusugasugá, 1.

(4463*a*) **Cacicus uropygialis pacificus** *Chapm.*

Cacicus uropygialis pacificus Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 655 (Alto Bonito, Col.).

Cassicus uropygialis Cass., Proc. Acad. N. S. Phila., 1860, p. 139 (Falls Truando); Hellm., P. Z. S., 1911, p. 1121 (Noanamá; Sipi; Calima).

Char. subsp.— Resembling *Cacicus uropygialis microrhynchus* (Scl. & Salv.) in general dimensions but with the bill of much the same size and shape as in *C. u. uropygialis.*

Tropical Zone of the Pacific coast from at least R. Salaqui southward into Ecuador, eastward into Antioquia.

Rio Salaqui, 1; Alto Bonito, 7; Baudo, 2; La Vieja, 1; Barbacoas, 5; Buenavista, Nariño, 1; Puerto Valdivia, 2.

(4464) **Amblycercus solitarius** (*Vieill.*).

Cassicus solitarius Vieill., Nouv. Dict. d'Hist. Nat., V, 1816, p. 364 (Brazil).

A male from Villavicencio appears to be the first specimen of this species to be recorded from Colombia.

Villavicencio, 1.

(4465*a*) **Amblycercus holosericeus flavirostris** *Chapm.*

Amblycercus holosericeus flavirostris Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 659 (Barbacoas).

Amblycercus holosericeus Hellm., P. Z. S., 1911, p. 1122 (Guineo, R. Calima).

Char. subsp.— Similar to *A. h. holosericeus* (Licht.) but smaller, the bill (in skins) mustard-yellow rather than greenish horn-color, the culmen averaging broader and flatter, squarer, less pointed anteriorly, less rounded posteriorly.

Ranges from the Tropical to the Temperate Zone and from the Pacific coast at least to the summit of the Eastern Andes.

In Ecuador it is found in the Pacific coast region as far south as Guayaquil. Northward it evidently does not cross the Atrato since specimens from El Real in eastern Panama are typical of *holosericeus.*

Alto Bonito, 1; Barbacoas, 1; Los Tambos, Cauca Region (Batty), 1; Rio Toché, 1; El Piñon, 1.

(4466) **Cassidix oryzivora violea** *Bangs.*

Cassidix oryzivora violea Bangs, Proc. N. E. Zoöl. Club, II, 1900, p. 11 (La Concepcion, Santa Marta, Col.); Hellm., P. Z. S., 1911, p. 1122 (Nóvita; Pueblo Rico).

Cassidix oryzivora Scl. & Salv., P. Z. S., 1879, p. 510 (Concordia; Antioquia; Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 163 (Valparaiso; Manaure; Pueblo Viejo; Palomina).

My material does not strongly support this race, which however has been pronounced as valid by Ridgway and Hellmayr. In a series of ten fully adult males the most purple one, having no trace of bronze wash, is from Suapure in the lower Orinoco valley, while specimens from the Magdalena Valley and Chocó show considerable bronze.

Colombian males are larger than those from elsewhere, but, as the appended table shows, this does not hold good for the females. If therefore *violea* is a valid form I can see no reason for not referring to it our specimens from east of the Andes, although this region is generally included in the range of true *oryzivora.*

Nóvita, 2; Noanamá, 2; La Manuelita, 2; Miraflores, 1; Guengüe, 1; La Palma, 1; Malena, 2; Buena Vista, 1; Barrigon, 1; Florencia, 1.

Measurements.

Place	Sex	Wing	Tail	Tarsus	Culmen
Chitra, Chiriqui	♂	182.5	137	40	36.5
Nóvita, Col.	♂	178	143	45	——
Cauca Valley, Col.	♂	191	143	42	34.5
" " "	♂	207	161.5	46	38.5
Miraflores, "	♂	216	160	45	39.5
Malena, "	♂	201	159.5	46	36
Trinidad, B. W. I.	♂	188	141	44	37
Suapure, Ven.	♂	184.5	139.5	42.5	35
R. Napo, Ec.	♂	191	145	45	36.5
" "	♂	192	142.5	44.5	36
Nóvita, Col.	♀	151	113.5	38	32
Noanamá "	♀	150	119	37.5	31
" "	♀	151	116	40	33
Palmira, "	♀	155	113	39.5	34
La Palma, "	♀	155	117	40	33
Malena, "	♀	153	113	39	33.5
Buena Vista, Col.	♀	159.5	124	40.5	32.5
Napo, Ecuador	♀	152	113	37	31
Trinidad, B. W. I.	♀	150	114	38	32
Demerara, B. G.	♀	155	120	38	31

(4474) **Molothrus bonariensis atronitens** *Cab.*

Molothrus atronitens Cab., Schomb. Reisen in Brit.-Guian., III, 1848, p. 682 (British Guiana).

I refer to this species an immature male from La Morelia. It measures: wing, 101; tail, 75; tarsus, 25.7; culmen, 18 mm.

Specimens from Merida, Puerto Cabello and Maripa, Venezuela, commonly referred to *Molothrus venezuelensis* Stone appear to me to be obvious intergrades between *Molothrus bonariensis cabanisi* (Cass.) and *M. b. atronitens.* Males can be exactly matched in color by both Colombian and Trinidad specimens, but the females are intermediate in color being somewhat darker than *cassini* and not so dark as *atronitens.* In size these birds are nearer *cabanisi* to which, on the whole, I should refer them.

La Morelia, 1.

(4475) **Molothrus bonariensis cabanisi** *Cass.*

Molothrus (*Lampropsar*) *cabanisii* Cass., Proc. Acad. N. S. Phila., 1866, p. 22 (Type from Santa Marta in Am. Mus. Nat. Hist. labelled by Cassin "*Lampropsar cabanisii* Cass.").

Molothrus discolor Scl. & Salv., P. Z. S., 1879, p. 509 (Concordia; Medellin; Sta. Elena).

Molothrus cassini Allen, Bull. A. M. N. H., XIII, 1900, p. 163 (Arihueca; Cacagualito).

Our specimens are all from the Tropical Zone west of the Eastern Andes. This form is distinguished by its large size and comparatively pale-colored female.

Caldas, 4; San Antonio, 5; Cali, 5; Miraflores, 5; San Agustin, 2.

(4475*a*) **Molothrus bonariensis æquatorialis** *Chapm.*

Molothrus bonariensis æquatorialis Chapm., Bull. A. M. N. H., XXXIV, 1915, p. 661 (Barbacoas, Col.).

Char. subsp.— Size smaller than that of *M. b. bonariensis,* the male resembling in color the males of other forms of this species; the female decidedly darker than the female of *M. b. cassini* and still darker than the female of *M. b. occidentalis,* much nearer the females of *M. b. atronitens* and *M. b. bonariensis,* but much larger than the former, somewhat larger than the latter and with a larger, heavier bill.

Inhabits the Tropical Zone of southwestern Colombia southward into Ecuador. Its relationships appear to be with true *bonariensis* rather than with the geographically nearer *cabanisi.* On the coast of Peru it is replaced by the paler *M. b. occidentalis.*

Tumaco, 1 ad. ♂, 2 juv.; Barbacoas, 1 ad. ♀, 1 juv.

(4484) **Agelaius icterocephalus icterocephalus** (*Linn.*).

Oriolus icterocephalus Linn., Syst. Nat., I, 1766, p. 163 (Cayenne).
Xanthosomus icterocephalus Wyatt, Ibis, 1871, p. 330 (Lake Paturia); Robinson, Flying Trip, 1895, p. 160 (Barranquilla).

Doubtless occurs throughout the greater part of Tropical Colombia in favorable localities.

Cali, 3; La Manuelita, 2; Barranquilla, 1.

(4484*a*) **Agelaius icterocephalus bogotensis** *Chapm.*

Agelaius icterocephalus bogotensis Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 191 (Savanna at Bogotá).

Char. subsp.— Resembling *A. i. icterocephalus* but larger, the male similarly colored, the female much darker, the head with less yellow, the back less distinctly streaked, the margins to the feathers grayer, less yellow; the flanks and abdominal region much grayer.

It was surprising to find a race of this Tropical Zone species common on the Bogotá Savanna where it is apparently quite isolated from the ancestral form which is not known to occur nearer than the marshes bordering the Magdalena River over 8000 feet below.

Bogotá Savanna, 16.

(4488) **Leistes militaris** (*Linn.*).

Emberiza militaris Linn., Syst. Nat., I, 1758, p. 178 (America).

Taken only in the coastal zone. It has not been recorded from western Colombia but occurs both in Panama and western Ecuador.

R. Sinu, 2; Barranquilla, 1.

(4498) **Sturnella magna meridionalis** *Scl.*

Sturnella meridionalis Scl., Ibis, 1861, p. 79 (Bogotá).
Sturnella ludoviciana Wyatt, Ibis, 1871, p. 330 (near La Cruz; Cocuta Valley, 5000 ft.).

This surprisingly close representative of our Meadowlark is an abundant bird on the Bogotá Savanna, and in arid regions it descends on both slopes of the Eastern Andes to the Subtropical Zone. We first met with it at an altitude of 6000 feet, on the Bogotá trail, between Villete and Facatativá, and except for a brief interval at the lower border of the paramo on the trail between Bogotá and Villavicencio, it was continuously distributed to somewhat below Quetame, or practically to the western limit of the forests of the eastern ridges of the range.

At Villavicencio it was not found, and if its absence from that region be actual, it would indicate that the Meadowlarks from the upper Orinoco (we have specimens of a small apparently undescribed form from Maipures) were not derived from the west but from the east and north. The bird was not met with in the Magdalena Valley.

The song of the Bogotá Meadowlark is of the *magna* type, but is often strongly suggestive of that of *neglecta.* I have heard such songs from Florida birds.

Slopes below Facatátivá (6000 ft.), 1; Bogotá Savanna, 14; La Holanda, 6; La Herrera, 3; Chipaque, 1; Choachi, 2; Quetame, 3.

(4502) **Icterus spurius** (*Linn.*).

Oriolus spurius Linn., Syst. Nat., I, 1766, p. 162 (Carolina).

Algodonal, Jan. 23, 1 ad. ♂; 1 ♀.

(4506) **Icterus auricapillus** *Cass.*

Icterus auricapillus Cass., Proc. Acad. Nat. Sci. Phila., 1847, p. 322 (Colombia); Allen, Bull. A. M. N. H., XIII, 1900, p. 162 (Bonda; Cacagualito; Santa Marta).

A Tropical Zone species of which we have specimens from Honda and vicinity.

Honda, 1; west of Honda, 2.

(4509) **Icterus mesomelas salvini** *Cass.*

Icterus salvini Cass., Proc. Acad. N. S. Phila., 1867, p. 51 (Costa Rica).

Icterus mesomelas Cass., Proc. Acad. N. S. Phila., 1860, p. 140 (R. Atrato); Scl. & Salv., P. Z. S., 1879, p. 509 (Neché).

Xanthornus mesomelas salvini Hellm., P. Z. S., 1911, p. 1122 (Condoto; Guineo).

A Tropical Zone species which we found only in the Atrato and Magdalena Valleys.

Atrato River, 4; Quibdó, 1; Remolino (lower Magdalena), 1; Puerto Berrio, 2; Guaduas, 1.

(4511) **Icterus giraudi** *Cass.*

Icterus giraudi Cass., Proc. Acad. N. S. Phila., 1847, p. 333 (Bogotá); *Ibid.*, 1860, p. 140 (R. Truando; R. Nercua); Wyatt, Ibis, 1871, p. 330 (not above 7000 ft., Bucaramanga region); Scl. & Salv., P. Z. S., 1879, p. 509 (Envigado; Concordia; Medellin); Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Ibagüe).

This wide-ranging Oriole is most common in the Subtropical Zone in which it is found on both eastern and western slopes of the three ranges of the Andes. Of our thirty-six specimens only two come from below 3000 feet, a male from Chicoral and a female from Villavicencio.

Specimens from the Cauca region average deeper in tone than those from the Eastern Andes, but the difference is slight and wholly over-lapped by individual variation.

San Antonio, 9; Cerro Munchique, 1; La Sierra, 2; Miraflores, 2; Salento, 1; Barro Blanco, 3; La Frijolera, 1; Chicoral, 1; San Agustin, 1; Andalucia (w. slope, 3000 ft.), 3; Fusugasugá, 3; El Carmen, 1; El Alto de la Paz, 1; Panama (above Pacho), 1; San Antonio (about 15 miles s. of Bogotá), 4; Quetame, 2; Buena Vista, 2; Villavicencio, 1.

(4511*a*) **Icterus hondæ** *Chapm.*

Icterus hondæ Chapm., Bull. A. M. N. H., XXXIII, 1914, p. 191 (Honda, Col.).

Char. sp.— Wings, tail, throat and capistrum black, unmarked as in *Icterus giraudi*, orange areas as deeply colored as in *Icterus auratus*, with which it agrees in size.

This species is most closely related to *giraudi*, too closely one might imagine for them both to breed in the same area. It is important to note therefore that while we have found *giraudi* to be widely distributed in Colombia, it is there a bird of the Subtropical Zone which we have rarely found below an altitude of 3000 ft. Consequently if *hondæ* be a representative of *giraudi* their apparent distribution in the same area may be explained by their occurrence in different zones, *hondæ* inhabiting the Tropical, *giraudi* the Subtropical Zone.

Honda, 2.

(4516) **Icterus xanthornus xanthornus** (*Gmel.*).

Oriolus xanthornus Gmel., Syst. Nat., I, 1788, p. 391 (Venezuela).

Icterus xanthornus Wyatt, Ibis, 1871, p. 329 (Santa Marta); Robinson, Flying Trip, 1895, p. 160 (Barranquilla); Allen, Bull. A. M. N. H., XIII, 1900, p. 162 (Santa Marta; Bonda).

Inhabits the arid northern coastal zone extending up the Magdalena at least to Puerto Berrio, and eastward to the llanos.

Turbaco, 1; La Playa, 3; Calamar, 2; Boca de Chimi, 1; Puerto Berrio, 1; Barrigon, 1.

(4528) **Megaquiscalus major assimilis** (*Scl.*).

Quiscalus assimilis Scl., Cat. Am. Bds., 1862, p. 141 ('Bogotá'); Wyatt, Ibis, 1871, p. 330 (Cienaga); Robinson, Flying Trip, 1895, p. 161 (Barranquilla); Allen, Bull. A. M. N. H., XIII, 1900, p. 162 (Cienaga).

Quiscalus macrourus Cass., Proc. Acad. N. S. Phila., 1860, p. 138 (Turbo; Carthagena).

Appears to be restricted to the sea coast where it occurs from at least Santa Marta westward and southward along the Pacific coast to Ecuador. I can discover no difference in color between males of this form and *Q. m. major;* but the bill in our six males of *assimilis* is obviously more decurved at the tip than it is in *major;* while four adult females of *assimilis* are much whiter below and browner above than any one of a large series of *major.* A fifth specimen is more fulvous below and can be matched in this respect by exceptional specimens of *major* but the upperparts, particularly the crown, are less brown than in any of our specimens of *major.*

Specimens from Manavi on the coast of Ecuador agree with those from Colombia, and the comparative stability of this species indicates that the Peruvian form does not differ from that of Ecuador and Colombia. In this event Sclater's name *assimilis* will be replaced by Swainson's *peruvianus* (Anim. in Menag., 1838, p. 354; Lima) and the race will stand *Megaquiscalus macrourus peruvianus* (Swains.).

La Playa, 1 ♂, 3 ♀ ♀; Buenaventura, 1 ♂.

(4531) **Macraglæus subalaris** (*Boiss.*).

Quiscalus subalaris Boiss., Rev. Zool., 1840, p. 70 (Bogotá); Wyatt, Ibis, 1871, p. 330 (Andes, Paramo of Pamplona, 9000 ft.).

This species appears to be restricted to the Temperate Zone of the Eastern Andes. Our two specimens were collected by Manuel Gonzales.

Subia, 2.

(4532) **Hypopyrrhus pyrohypogaster** (*De Tarragon*).

Cassicus pyrohypogaster De Tarragon, Rev. Zool., 1847, p. 252 (Colombia).

Hypopyrrhus pyrrhogaster Scl. & Salv., P. Z. S., 1879, p. 510 (Envigado; Sta. Elena).

Hypopyrrhus pyrohypogaster Hellm., P. Z. S., 1911, p. 1123 (Pueblo Rico; Siató); Stone, Proc. Acad. N. S. Phila., 1899, p. 307 (Nevada del Tolima).

For a common bird of apparently roving disposition which inhabits both forest and open scrubby growths this bird has a remarkably circumscribed range in Colombia. It was not found by us in the Cauca region proper, but in crossing the Quindio trail from Cartago to the Magdalena Valley we suddenly encountered it in small troupes in the heavy forest of the Subtropical Zone a few hours before reaching Salento. It was last seen on the banks of the Rio Toché at El Pie de San Juan where it was not uncommon in bushy growths.

We did not encounter it in the restricted Bogotá region, though we have two 'Bogotá' skins in our collection, but on the eastern slope of the Eastern Andes just below Andalucia, Miller secured one specimen, indicating, therefore, an upper Amazonian or East Andean origin rather than development in the limited area in which it has hitherto been known.

Peque, 1; La Frijolera, 7; Finlandia (8 miles w. of Salento), 2; Salento, 8; Rio Toché, common, no specimens secured; Caquetá Trail (7000 ft.), east slope below Andalucia, 1.

Family CORVIDÆ. Crows and Jays.

(4539) **Cyanocorax affinis affinis** *Pelz.*

Cyanocorax affinis Pelz., Sitz. Ak. Wien., XX, 1856, p. 164 (Bogotá); Scl. & Salv., P. Z. S., 1879, p. 510 (Cauca; Remedios); Allen, Bull. A. M. N. H., XIII, 1900, p. 162 (Bonda; Minca; Las Nubes; Onaca; Cacagualito).

Cyanocorax sclateri Heine, Journ. für. Orn., VIII, 1860, p. 115 (Carthagena).

Cyanocorax pileatus Cass., Proc. Acad. N. S. Phila., 1860, p. 138 (R. Truando; R. Nercua).

Cyanocorax affinis affinis Hellm., P. Z. S., 1911, p. 1123 (Noanamá; El Tigre; Pueblo Rico).

Occurs in both the arid and humid portions of the Tropical Zone of north Colombia, ranging up the Atrato Valley to the headwaters of the San Juan River and up the Magdalena to at least Chicoral, but apparently not reaching the Cauca Valley.

Specimens from the vicinity of Honda and from Chicoral are doubtless typical. Santa Marta specimens average slightly less blue above and have the bill smaller, while those from the Atrato and lower Cauca Valleys have a slight creamy tint on the white areas indicating an approach toward *C. a. zeledoni* of Panama.

Peque, 1; Dabeiba, 2; Alto Bonito, 2; Bagado, 1; Iguamiando, Chocó, 2; Turbaco, 3; Puerto Valdivia, 2; La Frijolera, 2; west of Honda, 4; Chicoral, 2.

(4547) **Cyanocorax violaceus** *Du Bus.*

Cyanocorax violaceus Du Bus, Bull. Acad. Brux., XIV, pt. 2, 1847, p. 103 (Peru).

Found only in the Tropical Zone at the eastern base of the Eastern Andes. Our specimens are from La Morelia and Villavicencio where we found it as high as 3500 ft. Young just from the nest were taken near Villavicencio March 15. I have no Peruvian specimens for comparison.

La Morelia, 5; Villavicencio, 6; Barrigon, 3.

(4549*a*) **Xanthoura yncas galeatus** (*Ridgw.*).

Xanthoura yncas galeata Ridgw., Auk, XVII, 1900, p. 27 (western Colombia; I suggest El Eden, Cen. Andes).

Cyanocorax incas Wyatt, Ibis, 1871, p. 330 (4000 ft. upward, Bucaramanga region); Scl. & Salv., P. Z. S., 1879, p. 510 (Retiro; Concordia; Sta. Elena).

There are two well-marked forms of *Xanthoura* in the Subtropical Zone of the Bogotá region; the present, and *X. y. cyanodorsalis* DuBois. *X. y. galeatus* is here restricted to the western slopes of the Eastern Andes, and is found also on both slopes of the Central Andes and in the more southern parts of the Western Andes; *X. y. cyanodorsalis* is found on the eastern slopes of the Eastern Andes and ranges northeastward at least to Merida, Venezuela. Our series of over fifty specimens indicates clearly the range of variation and characters of each of these forms.

X. y. galeatus, as has been pointed out by Ridgway (*l. c.*) differs from true *yncas* (of which we have three Peruvian specimens) in size and, mainly, in the greater development of the nasal plumes; from *cyanodorsalis* it differs strikingly and constantly (in fresh plumaged adults) in having the head, posterior to the blue frontal plumes, and nape marguerite-yellow, varying in intensity. In some specimens it is clear, but more frequently it is tinged with blue, especially at the junction with the back, which is green with, in some specimens, a bluish wash. The amount of blue on the hindhead, nape, and back is apparently largely dependent on age, young birds (with small nasal plumes) having the maximum amount, sufficient in juvenal plumage nearly to obscure the pale yellow of the head.

In *cyanodorsalis,* the area which in *galeatus* is marguerite-yellow, is paler and is restricted to the occiput the whole nape being blue; while the back is usually well tinged with this color.

The two forms are indeed strikingly different and there has not, I believe, been any question as to their distinctness, but authors do not agree as to which one DuBois's name of *cyanodorsalis* should be applied. Ridgway fixes it on the blue-naped, blue-backed bird of the eastern slopes of the Andes; Hellmayr,[1] on the contrary, attaches it to the pale-naped bird which Ridgway has called *galeatus* and applies a new name "*andicola*" to the blue-naped bird taking Merida, Venezuela, as his type-locality.

Dubois's description,[2] however, as well as his figure,[3] seems to leave no doubt as to which bird he applied the name *cyanodorsalis*. One has only to read his diagnosis (*l. c.*) "Similis præcedenti [= *yncas yncas*]; sed cervice *cæruleo-violaceo* et dorso cæruleo" to be convinced that of the two he could here have had only the blue-naped bird in mind, and if further confirmation of this belief be required, it is to be found in his plate which is obviously based on the blue-naped bird.

Ridgway's type was without exact locality but was believed to have come from western Colombia and was part of a collection which contained specimens of *Cyanolyca quindiuna* Scl. I would suggest therefore as a definite type-locality El Eden, a posada at an altitude of 8300 feet, on the Quindio Trail, about ten miles west of Ibagüe, from which we have typical specimens.

Cerro Munchique, 1; Popayan, 1; Miraflores, 4; Salento, 12; Sta. Elena, 7; La Frijolera, 3; El Eden, 4; La Candela, 3; La Palma, 1; Andalucia (w. slope, 3000 ft.), 1; Aguadita, 2; Subia, 1; Anolaima, 1.

(4550) **Xanthoura yncas cyanodorsalis** *DuBois.*

Xanthoura cyanodorsalis DuBois, Bull. Acad. Roy. (2 ser.), 1874, p. 492 (New Grenada).

Xanthoura yncas andicola Hellm. & Seil., Arch. für Naturg., 1912, p. 72 (Andes of Merida, Venez.).

We found this Jay only on the eastern slope of the Eastern Andes where it was locally common in the Subtropical Zone. When allowance is made for differences due to age, I find no indication of intergradation between this form and *galeatus* in our series of thirteen of the former and forty-nine of the latter, and this in spite of the fact that we took specimens of both at localities within thirty-five miles of each other (Quetame on the eastern slope, Fusugasugá on the western slope of the Eastern Andes).

Four specimens from Merida, Venezuela (type locality of *X. y. andicola* Hellm. & Seil.), while possibly greener above, are apparently not separable from the Bogotá bird, when if my identification of the DuBois's description is correct, *andicola* becomes a pure synonym of *cyanodorsalis*. A young bird just from the nest was taken at Quetame, February 25.

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[1] Arch. für Naturg., 1912, p. 72.

[2] Bull. Acad. Roy. Belg., 1974, p. 492.

[3] Syn. Av., I, 1899, pl. x, fig. 1.

Quetame, 5.

(4557) **Cyanolyca armillata quindiuna** (*Scl.*).

Cyanocitta armillata, γ. quindiuna Scl. & Salv., P. Z. S., 1876, p. 272 (Quindio Mts. = Central Andes, Col.).

Inhabits the Temperate Zone of the Central Andes. Specimens from Valle de las Pappas agree with those from Laguneta which being near the Quindio Pass may be considered as the type-locality for this race.

Valle de las Pappas, 5; Laguneta, 7; Santa Isabel, 1; Salento, 1.

(4559) **Cyanolyca armillata armillata** (*Gray*).

Cyanocorax armillatus Gray, Gen. Bds., II, 1849, p. 307, pl. 74 (Bogotá).

Cyanocitta armillata Wyatt, Ibis, 1871, p. 330 ("high regions," near Bucaramanga).

Our specimens were collected by natives in or near the Temperate Zone of the Bogotá region.

Anolaima, 1; Choachi, 1.

APPENDIX.

Gazeteer of Colombian Collecting Stations.

For convenience of reference and to aid in finding stations on the map, I append an alphabetical list, with position number in parenthesis, of all the localities at which, so far as I can learn, birds have been collected in Colombia, together with their approximate latitude, longitude and altitude and a brief statement of their more significant features. The position of the better-known localities is taken from standard sources. The latitude and longitude of our camps or collecting stations at wayside posadas, were not determined by us and are here given on the basis of the distance of these stations from localities the position of which has been ascertained, mainly with the object of facilitating reference to them on the map. The altitude for most of our own stations was determined by the aneroid barometer, and although we used only standard instruments, we often had convincing evidence of their inaccuracy. In connection with those localities visited by our own expeditions, I give the dates at which collections were made and the number of specimens secured.

Aguadita.— (Alt. 6500 ft.) A posada on the Bogotá-Fusugasugá trail, below El Roble and with similar surroundings. Below this point the forest has been cleared and the land is largely under cultivation. (No. 75.)
Expedition No. 7; March 25–31, 1913; 188 specimens.

Agua Dulce.— (Alt. 2400 ft.) Santa Marta region two miles southeast of Minca. Smith Expedition.

Algodonal.— A place on the lower Magdalena River, one day's sail above Calamar. (No. 127.)
Expedition No. 7; January 23, 1913. 11 specimens.

Almaguer.— (Lat. 1° 54′, long. 77°; alt. 7500 ft.) Our camp here was situated in luxuriant Temperate Zone forest in the Central Andes south of Popayan and 2500 ft. above the town of Almaguer. (No. 61.)
Expedition No. 4; March 9–18, 1912; 175 specimens.

Alto.— (Lat. 8° 2′, long. 73° 32′; alt. about 6000 ft.) A "hut" visited by Wyatt, situated on the crest of a range between Ocaña and the Magdalena. (No. 118.)

Alto Bonito.— (Alt. 1500 ft.) A station on the Rio Sucio on the western slope of the Western Andes ten miles below Dabeiba. The country is covered with luxuriant virgin forest. (No. 5.)
Expedition No. 8; February 16–23; 255 specimens.

Ambalema.— (Alt. ab. 900 ft.) A town on the Magdalena above Honda from which Stone records several species collected by Detwiler. (No. 73.)

Andalucia.— (Alt. 7000 ft.) A station at the summit of the trail leading from Guadeloupe in the upper Magdalena Valley to the Caquetá region. The range is here heavily forested, the forest on the western side extended downward to about 3500 feet. Collections were made chiefly on the western slope. (No. 67.)
Expedition No. 5, June 1–16, 1912; 248 specimens.

Andes w. of Popayan.— (Alt. 10340 ft.) A camp on the Micai trail on the crest of the first ridge of the Western Andes, w. of Popayan. The fauna is typically representative of the Temperate Zone. Vegetation, Miller writes, "is scarce, scrubby and stunted." Here *Diglossa gloriosissima* was discovered. (No. 58.)
Expedition No. 2, July 10–23, 1911; 235 specimens.

Anolaima.— A locality in the Bogotá region lying just below the border of the tableland west of Facatativá. Since the early days of the trade in 'Bogotá' skins, it has been a favorite collecting ground for native collectors who still frequent it. (No. 85.)

Antioquia.— (Lat. 6° 24′, long. 76° 11′; alt. 2000 ft.) A town on the eastern slope of the Western Andes at and near which Salmon collected. Except when applied to Salmon's specimens the name generally applies to the Department of Antioquia. (No. 36.)

Antioquia.— An important Department of northern Colombia which extends from the Atrato to the Magdalena rivers. Trade skins which have been shipped from this region in small numbers and are spoken of as Antioquian, doubtless come largely from the vicinity of Medellin.

Aracataca.— (Lat. 10° 40′, long. 74° 10′; alt. 60 ft.) A village at the western base of the Santa Marta group from which Madaraz described several new forms. (No. 136.)

Arehueca.— Coast of Santa Marta region, three miles south of Cienaga.
Visited by Simons. (No. 135.)

Atanques.— (Lat. 10° 32′, long. 73° 37′; alt. 2800 ft.) About ten miles north of Valle Dupar, Santa Marta region. Visited by Simons. (No. 155.)

Atrato River.— The most important river of western Colombia. The Michler expedition collected in the lower Atrato Valley, and, in addition to specimens secured at stated points on the Atrato or its tributaries, Mrs. Kerr has sent us 58 specimens labeled simply 'Atrato'.

Bagado.— (Lat. 5° 18′, long. 76° 24′; alt. 650 ft.) A locality near the sources of the Atrato at which Mrs. Kerr collected 71 specimens. (No. 9.)

Barbacoas.— (Lat. 1° 54′, long. 78° 17′; alt. 68 ft.) A town in southwestern Colombia on the Telembi River. It is surrounded by "thick forest and impenetrable jungle." Collections made at and near this place added many Ecuadorian species to Colombia's known avifauna. (No. 29.)
Expedition No. 6; September 10–October 7, 1912; 491 specimens.

Barranquilla.— (Lat. 11°, long. 74° 40′; alt. 0.) A city of some 40,000 inhabitants, about 20 miles from the mouth of the Magdalena. Point of departure for steamers up that river. The surrounding country is typical of the semi-arid tropics and there are also lagoons and marshes connected with the river. No large collection of birds appears to have been made here but most of the collectors who enter the Magdalena region secure a few specimens near Barranquilla. (No. 130.)

Barrigon.— A locality at the head of navigation on the Meta River, in river forest, at which Manuel Gonzalez collected. (No. 169.)

Barro Blanco.— (Alt. 7200 ft.) A station in the northern part of the Central Andes east of Sta. Elena, at the base of a ridge bordering a well-cultivated plateau. The original forest seems to have disappeared. (No. 39.)

Expedition No. 8; November 25–29, 1914; 88 specimens.

Baudo Mts.— A range on the Pacific coast west of Quibdó. Our 86 specimens from these mountains were all collected by Mrs. Kerr, none at a higher altitude than 2500 feet. The exact locality is not stated. Collections from the summit of this range are greatly to be desired.

Boca de Chimi.— A place on the lower Magdalena River two days sail above Calamar. (No. 124.)

Expedition No. 8; November 6, 1914; 10 specimens.

Bogotá.— (Lat. 4° 35′, long. 74° 10′; alt. 8750 ft.) Capital of Colombia situated on the Savanna of the same at the foot of the mountains which enclose the Savanna on the east. For about eighty years it has been the shipping point for birds' skins very few of which seem to have been taken near the city itself. The Savanna, indeed, has evidently been but little worked by the native collectors. I shot the types of three new forms in or near the Suba marshes, within sight of the city, in one morning, and the types of two more have since been secured there for us by Hermano Apolinar Maria. The surrounding country is composed largely of pastures and planted fields, with some marshes, chiefly during the rains. There are no trees except the introduced eucalyptus. Bogotá as a definite locality is referred to as Savanna at Bogotá. (No. 179.)

Expedition No. 7; February 14–18, 1913; 80 specimens.

Bogotá.— A generalized regional name applied to native-made skins shipped from the city of Bogotá. By far the greater number of these skins are secured within the area lying between the Magdalena Valley and the llanos at the base of the Andes on the east, and boundaries of the Department of Cundinamarca at the north and south (but see further details under "Bogotá collections" in the Review of Colombian Ornithology).

Bonda.— (Lat. 11° 17′, long. 74° 2′; alt. 150–250 ft.) Seven miles east of Santa Marta on the Rio Manzanares. Smith's principal station. (No. 141.)

Bucaramanga.— (Lat. 6° 52′, long. 73° 34′; alt. 3000 ft.) A city in the Eastern Andes situated on a savanna and surrounded by mountains. Berlepsch has reported on a collection of native-made skins from this region, and Wyatt collected some specimens here. (No. 108.)

Buenaventura.— (Lat. 3° 53′, long. 77° 10′; alt. 0). The principal port on the Pacific coast of Colombia at the head of Buenaventura Bay, 14 miles from the sea. The surroundings are low and wooded, the shores being everywhere lined with mangroves. Few specimens appear to have been collected here by the naturalists who have worked in this region. (No. 19.)

Expedition No. 1; March 23–28, 1911; 35 specimens.

Buena Vista.— (Alt. 4500 ft.) A posada on the crest of the most eastern ridge of the Eastern Andes on the trail from Bogotá to Villavicencio and some 3000 feet above the last-named town. To the east the country descends abruptly to the llanos; to the west, to the Rio Negro. Both slopes are heavily wooded with virgin forest broken by clearings. The region is a favorite one for native collectors and many so-called 'Bogotá' skins have been taken here. (No. 165.)

Expedition No. 7; Feb. 28–Mch. 15, 1913; 408 specimens.

Buenavista.— (Alt. 1200 ft.) A station in the humid Tropical Zone in the Department of Nariño, southwestern Colombia. Not to be confused with Buena Vista above Villavicencio near the eastern base of the Eastern Andes. (No. 30.)

Expedition No. 6; Oct. 1–7, 1912; 108 specimens.

CACAGUALITO.— (Alt. 1500 ft.) In the Santa Marta region, twenty miles east of Santa Marta; "vegetation chiefly mountain forest." Visited by the Smith Expedition.

CALAMAR.— (Alt., near sea-level.) A town on the lower Magdalena River in the Arid Coastal Zone. It is surrounded by open savannas with some chapparal-like growth and occasional marshes. Birds are exceedingly abundant; our collections were made while the steamer stopped to discharge and load at the pier of the railway line for Carthagena. (No. 128.)

Expedition Nos. 1, 7, and 8; June 3, 1911; Jan. 21, 22, 1913; Nov. 4, 1914; 112 specimens.

CALDAS.— (Alt. 2560 ft.) A small town on the railway from Buenaventura to Cali, in the Caldas basin on the upper Dagua River. The immediately surrounding country is bare and arid. There is some growth along the river but the hills are grass-grown with occasional cacti and small acacia-like trees. The bird-life appears to have been derived from the Cauca Valley. (No. 22.)

Expedition No. 1; Nov. 10–24, 1910, 128 specimens.

CALI.— (Lat. 3° 25′, long. 76° 45′; alt. 3500 ft.) The most important town of the Cauca region and base of the American Museum's expeditions for somewhat more than a year. The surroundings are largely open pastures and afford poor collecting, but the marshes bordering the Cauca River, distant three miles, contain many interesting water-birds. Here the rare Duck (*Marila nationi*) previously known only from two specimens taken near Lima, Peru, was found to be common. (No. 53.)

Expedition No. 1; Dec. 19–31, 1910; May 8–11, 1911; Expedition No. 2, Jan. 25–Feb. 8, 1912; 313 specimens.

CANUTO.— (Lat. 7° 35′; long. 73° 28′; alt. 6000 ft.) A "hut" three days' out on the trail from Ocaña to Bucaramanga, visited by Wyatt. The surrounding country is forested. (No. 113.)

CARTHAGENA.—(Lat. 10° 25′, long. 75° 40′; alt. sea-level.) A city in northern Colombia at which various collectors have worked, but no large, exhaustive collection has been made here. It is the type-locality of a number of Cabanis's species, and was visited by the Michler Expedition, Dr. Detwiler, and Mrs. Kerr (see Turbaco). The surrounding country is semi-arid with open savannas and scrubby-growths. (No. 132).

CATAMUCHO.— "A little village situated on the banks of the Magdalena about 100 miles from Barranquilla" at which Wyatt collected several specimens. (No. 125.)

CAUCA VALLEY.— A term properly applied to that region traversed by the Cauca River lying between the foothills north of Popayan and the vicinity of Cartago. It is sometimes misapplied to the region bordering the lower Cauca River in Antioquia, which is here referred to as the lower Cauca Valley, though it has no real connection with the Cauca Valley proper. Some of Salmon's specimens are labeled merely "Cauca," indicating, doubtless, that they were taken somewhere along the Cauca River in Antioquia.

CERRO MUNCHIQUE.— (Alt. 8325 ft.) A camp in the forest of the Subtropical Zone on the eastern slope of the Western Andes west of Popayan. (No. 57.)

Expedition No. 2; May 22–June 24, 1911; 311 specimens.

Chicoral.— (Alt. 1200 ft.) A station on the west side of the Magdalena Valley, west of Giradot, where the Coello River is crossed by a suspension bridge. The region is open and arid, with no forest, but some growth of trees and bushes along the stream. Although in the Magdalena Valley proper and but 600 feet above the river and not more than twelve miles from it, specimens taken at Chicoral, either by their larger size or different coloration sometimes differ perceptibly from those taken at Honda. (No. 69.)

Expedition No. 3; Oct. 6–13, 1911; 186 specimens.

Chinchicua Pass.— A station in the Santa Marta Mts. visited by Simons. (No. 153.)

Chinchicua Valley.— (Alt. 6500 ft.) A locality in the Santa Marta Mountains visited by Simons. (No. 154.)

Chipaque.—(Alt. 9000–9500.) A town lying in the first valley of the Eastern Andes, east of Bogotá. The immediately surrounding country is devoted largely to agriculture and grazing. The slopes to the west, just below the Pass on the Bogotá trail, are covered with low Temperate Zone forest. (No. 82.)

Expedition No. 7; Feb. 21–25, 1913; 120 specimens.

Chirua.— (Alt. 4000 ft., Salv. & Godm.; 7000 ft., Bangs.)
A station in the Santa Marta Mountains visited by Simons and Brown. (No. 149.)

Choachi.— A locality in the Bogotá region on the eastern slope of the first ridge east of Bogotá, from which, through Hermano Apolinar Maria and through native collectors, we have received a number of specimens. (No. 83.)

Cienaga.— (Lat. 11° 01′, long. 74° 15′; sea-level.) A coast town twenty miles south of Santa Marta. It is characterized by shallow, mangrove-bordered lagoons and mud-flats. Visited by the Smith Expedition.

Cincinnati.— (Alt. 4500 ft.) Hacienda in the San Lorenzo Mts. of the Santa Marta group at which Carriker has made important collections. (No. 144.)

Cocal.— (Alt. 4000 ft.) A camp in the forest on the western slope of the most eastern ridge of the Western Andes. Several species labeled 'Cocal' were in reality taken on the trail above this point, a fact which accounts for the apparent presence of certain birds at 'Cocal' which were not elsewhere met with at so low an altitude. (No. 26.)

Expedition No. 2; June 6–18, 1911; 149 specimens.

Cocuta Surata.— (Lat. 70° 5′, long. 73° 30′; alt. 5000 ft.) A locality on the trail between Ocaña and Bucaramanga visited by Wyatt. (No. 110.)

Combeima River.— A river of the Central Magdalena system from which Detwiler secured specimens.

Concha.— A station in the Santa Marta coast region visited by the Smith Expedition.

Concordia.— (Lat. 5° 55′, long. 76° 11′; alt. 5807 ft.) A town on the eastern slope of the Western Andes at which Salmon collected. (No. 43.)

Condoto.— (Lat. 5° 5′, long. 76° 35′; alt. 150 ft.) A locality in the Rio Condoto, a tributary of the upper San Juan visited by Palmer. (No. 16.)

Cúcuta. (Lat. 7° 38′, long. 72° 52′; alt. 907 ft.). A city near the Venezuelan boundary. (No. 159.)

Dabeiba.— (Lat. 7° 6′, long. 76° 25′; alt. 2000 ft.) A small town on the Rio Sucio on the western slope of the Western Andes, at the upper limit of the valley forest. Expedition, No. 8, February 12–14, 25–26, 1914; 162 specimens. (No. 6.)

Don Diego.— A locality at the mouth of the R. Don Diego, 45 miles east of Sta. Marta in a humid forest region.

El Alto de la Paz.— (Alt. 4626 ft.) A locality in the Bogotá region above Pena, at which Manuel Gonzalez collected. (No. 93.)

El Carmen.— (Alt. 9154 ft.) A locality about 69 miles north of Bogotá at which Manuel Gonzalez collected. (No. 95.)

El Carmen.— (Alt. 4550 ft.) A small town on the west slope of the western Andes between Caldas and Las Cruces.

El Consuelo.— (Alt. 3300 ft.) A posada on the trail from Bogotá, about 12 miles from, and 2700 feet above Honda. The original forest has largely disappeared from near the trail and but one small strip of first-growth was found. The views from this point of the snow peaks of the Central Andes across the Magdalena Valley are superb. (No. 97.)

Expedition No. 7, Apl. 5–7; 37 specimens.

El Eden.— (Alt. 8500 ft.) A posada on the Quindio Trail above Ibagüe. Only a few small patches of Subtropical Zone forest still remain along the trail, and the station is a poor one for the collector. (No. 71.)

Expedition No. 3, Oct. 17–21, 1911; 138 specimens.

El Guayabal.— (Lat. 8° 5′, long . 72° 40′ W.; alt. about 1000 ft.) "A small flag-station, ten miles north of San José de Cúcuta on the railroad between that place and Puerto Villamizar. The vegetation is largely thorny shrubs, but with fairly heavy forest along watercourses and on favored hillsides. The region is one of low, rolling hills lying between a rather arid valley to the south and the humid region on the shores of Lake Maracaibo to the north. The fauna and flora show relations to both regions.". (W. H. Osgood.) (No. 160.) Field Museum Expedition, W. H. Osgood and S. G. Jewett.

El Libano.— (Alt. 5000–6000 ft.) A forested station in the San Lorenzo range, Santa Marta group, visited by the Smith Expedition.

El Mamon.— (Lat. 10° 30′, long. 73° 50′; alt. 8000 ft.) A station in the Santa Marta group, visited by Brown. (No. 156.)

El Paillon.— A locality in the Pacific coast region "several hours' journey up the Dagua" (Hellmayr), visited by André. Simon & Dalmas (1901) place it at sea-level.

El Piñon.— (Alt. 9600 ft.) A posada on the trail from Bogotá to Fusugasugá at the entrance to the gorge-like valley which leads from the hills, here forming the rim of the tableland, to the last-named town. The surrounding country is more or less covered with stunted forest with glade-like openings. The fauna is purely that of the Temperate Zone. (No. 77.)

Expedition No. 7, April 1–4, 1913; 112 specimens.

El Roble.— (Alt. 8100 ft.) A posada on the trail from Bogotá to Fusugasugá in the gorge-like valley leading from the tableland to the last-named city. The country is here largely covered with primeval forest broken by a few small clearings. Although only an hour's walk from El Piñon, few birds are common to both localities. (No. 76.)

Expedition No. 7, April 1–5, 1913; 192 specimens.

El Tigre.— (Alt. 320 ft.) A locality on the Rio Tamaná, a tributary of the San Juan, visited by Palmer.

El Tigre.— (Alt. 5000 ft.) A ranch on the Buenaventura-Cali trail just west of the San Antonio pass, visited by André.

Envigado.— (Lat. 6° 3′, long. 75° 55′; alt. 5500 ft.) A town ten miles south of Medellin at which Salmon collected. (No. 41.)

Florencia.— (Alt. 675 ft.) A small town in the Caquetá region near the eastern base of the Eastern Andes. Collections were made from a nearby ranch where a large clearing had been made in the "ocean of forest" which covers this region. (No. 171.)

Expedition No. 5, June 20–July 5, 1912; 257 specimens.

Frontino.— (Lat. 6° 54′, long. 76° 16′; alt. 4780 ft.) A town on the western slope of the Western Andes at which Salmon collected. (No. 7.)

Fundacion.— (Lat. 10° 35′, long. 74° 14′; alt. 154 ft.) A village at the western base of the Santa Marta group on the railway from Santa Marta, at which Carriker collected.

Fusugasugá.— (Alt. 5464 ft.) A town some 35 miles from Bogotá in the heart of a coffee-growing region. With the felling of the virgin forest its bird-life has retreated up the mountain side and various Magdalena Valley forms have appeared. (No. 74.)

Expedition No. 7, Mch. 22–24; 88 specimens.

Gallera.— (Alt. 7000 ft.) A camp in virgin forest on the western slop e of the most eastern ridge of the western Andes. (No. 25.)

Expedition No. 2, June 26–July 4, 1911; 106 specimens.

Fómeque.— (Lat. 4° 30′, long. 73° 50′; alt. 6074 ft.) A town east of Bogotá from which many native-made skins come. (No. 84.)

Gorgona Island.— (Lat. 2° 58′, long. 78° 5′; alt. sea-level.) An island lying some twenty miles off the shore of southwestern Colombia. It is described (Bull. M. C. Z. 1905, p. 88) by W. W. Brown, Jr. who collected on it from June 19 to July 2, 1904, as five miles long, about half a mile wide and with three hills, the highest 800 feet in altitude. It is completely covered with luxuriant forest, has a heavy rainfall, with no dry season, and is uninhabited. Of the sixteen birds known from Gorgona, five have been described by Thayer and Bangs as new. Bangs (*l. c.* pp. 90, 91) has also described a spiny rat (*Proechimys gorgonæ*) and a monkey (*Cebus curtus*), and Barbour (*l. c.* pp. 99–102) has described as new, two lizards, a snake, and two frogs, all related to mainland species. (No. 27.)

Guaduas.— (Alt. 3164 ft.) A town lying in the first valley east of Honda and distant one day's journey. The immediate surroundings are largely under cultivation or in pasturage, but there is some forest on the surrounding mountains. Some native-made skins are said to come from Guaduas and it was visited by Wirt Robinson. (No. 96.)

Guengüe.— (Alt. 3500 ft.) A ranch in the Cauca Valley on the west side of the Cauca River about fifteen miles southeast of Cali. The country is covered with rather low but dense forest growth which was being rapidly cleared to create grazing area. Some of the streams were widely bordered with a heavy growth of great bamboos. (No. 55.)

Expedition No. 1, May 4, 5, 1911; 15 specimens.

Herradura.— (Lat. 7° 56′, long. 73° 30′.) "Half-a-dozen-huts," three or four hours from Ocaña, visited by Wyatt. (No. 116.)

Honda.— (Lat. 5° 15′, long. 74° 50′; alt. 600 ft.) A city on the Magdalena River a few miles above the head of navigation on the lower half of the river. The main mule-trail for Bogotá begins at this point. The city is at the foot of the Eastern Andes, and the Magdalena Valley, with its open savannas and thinly forested buttes and hills, lies to the west. There is some forest-growth along the river and its tributaries, but no large heavily forested areas until one reaches La Dorada, some twenty miles north. (No. 98.)

Expedition, No. 7, Feb. 3–8; 217 specimens.

IBAGÜE.— (Alt. 4000 ft.) A city at the eastern base of the Central Andes at the entrance to the Quindio Trail. Stone's report on the Detwiler collection lists specimens from this locality. (No. 70.)

IGUAMIANDO. A locality in the upper Atrato Valley from which Mrs. Kerr has sent us twenty specimens.

JERICO.— (Lat. 5° 40′, long. 75° 55′; alt. 6454.) A town on the eastern slope of the Western Andes at which Salmon collected. (No. 54.)

JIMINEZ.— "A station in the Tropical Zone of the Pacific slope", a morning's walk from Los Mangos [= Cisneros], in a deep ravine by the side of the pass between Los Mangos and a place called Ventanas on the road to San Antonio and Cali. Above Ventanas the country becomes open" (Hellmayr). Visited by Palmer.

JUNTAS DE TAMANÁ.— (Lat. 5° 2′, long. 76° 21′; alt. 400 ft.). A small village on the Rio Tamaná in the Tropical Zone forest of the Pacific coast region. Visited by Palmer, Miller and Allen. (No. 14.)

Expedition No. 3, Dec. 14–20, 1911; 99 specimens.

LA CANDELA.— (Alt. 6500 ft.) An Indian ranch in the Subtropical Zone, a day's journey west of San Agustin. A small clearing is surrounded by giant, primeval forest. (No. 65.)

Expedition No. 5, May 8–20; 300 specimens.

LA CONCEPCION.— (Alt. 3000 ft.) A station in the Santa Marta group visited by Brown.

LA CRUZ.— (Lat. 7° 52′, long. 73° 27′; alt. 4300 ft.) A village in the Eastern Andes near Ocaña, visited by Wyatt. It is situated in a large savanna. (No. 115.)

LA DORADA.— (Alt. at 500 ft.) Actual head of navigation on the lower part of the Magdalena, and beginning of the railroad to Honda. Upper limit of the bottomland forest. (No. 99.)

LA FLORIDA.— (Alt. 7725 ft.) A station in the Andes west of Popayan.

Expedition No. 2; July 5–9, 1911; 80 specimens.

LA FRIJOLERA.— (Alt. 5000 ft.) A station in the lower part of the Subtropical Zone on the western slope of the Central Andes above Puerto Valdivia on the lower Cauca. The surroundings are covered with virgin forest. (No. 34.)

Expedition No. 8, Dec. 29–Jan. 4, 1916; 148 specimens.

LAGUNETA.— (Alt. 10,300 ft.) A posada on the Quindio Trail, a short distance west of the Pass. The country is covered with primitive, Temperate Zone forest. Birds are abundant and the station proved exceptionally rich in forms, notably Grallarias, not encountered, or but in small numbers, elsewhere. (No. 47.)

Expedition No. 2, Aug. 28–Sept. 13, 1911; 349 specimens.

LA HERRERA.— (Alt. 8171 ft.) A lagoon south of Bogotá at which Manuel Gonzalez collected. (No. 78.)

LA HOLANDA.— (Alt. 8171 ft.) A locality twenty-six miles northeast of Bogotá at which Manuel Gonzalez collected. (No. 88.)

LA MANUELITA.— (Lat. 3° 36′, long. 76° 27′; alt. 3500 ft.) The Eder estate on the east side of the Cauca Valley about three miles north of Palmira. The neighboring country is largely devoted to agriculture and grazing, but there are small wooded tracts, which still harbor howling monkeys, many trees along the roadsides, and comparatively large areas in bushy second growths. Birds are abundant and the collecting for all but forest-inhabiting species, excellent. (No. 51.)

Expedition No. 1, April 12–18, 1911, 124 specimens.

La Mar.— (Alt. 8203 ft.) A locality in the Bogotá region, near Subachoque, at which Manuel Gonzalez collected.

La Maria.— (Alt. 4700 ft.) A locality on the Pacific slope of the Western Andes above Buenaventura.

La Morelia.— (Alt. 600 ft.) A hacienda two days' journey southeast of Florencia in the virgin forest which everywhere covers this part of Colombia. This locality, with Florencia, was one of the most productive of any visited by American Museum expeditions and many species were secured which have not heretofore been recorded from Colombia. On the accompanying map of this report the name is misspelled "La Murelia." (No. 172.)

Expedition No. 5, July 8–26, 1912; 415 specimens.

Las Lomitas.— (Alt. 4526 ft.) A ranch on the western slope of the Western Andes in the humid forest of the Subtropical Zone. The bird-life is essentially like that of San Antonio. (No. 24.)

Expedition No. 1, Feb. 26–Mch. 17, 1911; 165 specimens.

Las Nubes.— (Alt. 4500 ft.) A station in the Santa Marta group, three miles east of Onaca in mountain forest.

Smith Expedition.

La Palma.— (Alt. 5500 ft.) A station in the Subtropical Zone one day's journey south of San Agustin. There are some clearings surrounded by dense virgin forest. (No. 64.)

Expedition No. 5, April 25–May 4, 1912; 130 specimens.

La Panuela.— (Alt. 9870 ft.) A "paramo" in the Bogotá region, north of Facatativá, at which Manuel Gonzalez collected. (No. 89.)

La Playa.— (Alt. sea-level.) A station on the railway line between Puerto Colombia and Barranquilla. On one side lie the open savannas of the arid coastal zone, on the other, mangrove-bordered streams and lagoons. (No. 131.)

Expedition No. 8, March 23–26, 1915; 105 specimens.

La Porquera.— (Alt. 8633 ft.) A locality in the Bogotá region, above La Pradera, at which Manuel Gonzalez collected. (No. 94.)

La Pradera.— (Alt. 5325 ft.) A locality forty-five miles north of Bogotá at which Manuel Gonzalez collected. (No. 92.)

Las Cruces.— (Alt. 7000 ft.) The divide in the Western Andes between La Tigra and San Antonio. American Museum specimens from this locality are labelled 'San Antonio' — the nearest settlement.

La Selva.— (Alt. 4600 ft.) A locality on the headwaters of Rio San Juan, visited by Palmer.

La Sierra.— (Alt. 6800 ft.) Situated "on a saddle-back ridge just before the trail drops into the cañon of the Patia." There are small groves of rather open, dry forest. Birds were scarce. Nevertheless the only Condor seen by us in Colombia was observed here, and here alone the strongly marked new Thrush, *Planesticus caucæ*, was found. (No. 59.)

Expedition No. 4, March 1–2, 1912; 66 specimens.

La Tigra.— (Alt. 5685 ft.) A hacienda on the western slope of the Western Andes just below Las Cruces, visited by Andrè.

La Vieja.— A locality in the upper Atrato Valley at which Mrs. Kerr secured thirteen specimens.

Los Mangos.— (See Los Cisneros.)

Loma Hermosa.— A locality on the headwaters of the Rio San Juan visited by Palmer.

Los Cisneros.— (Lat. 3° 49′, long. 76° 40′; alt. 1005 ft.) A small town (also called Juntas) on the railroad from Buenaventura to Cali, at the junction of the Dagua and Las Petitas. The surroundings, fauna, and collecting conditions are essentially like those found at San José. Visited by Delattre, Rosenberg, and Hopke. (No. 21.)

Expedition No. 1, Mch. 10–21, 1911; 82 specimens.

Macotama.— (Alt. 8000 ft.) A station in the Santa Marta group visited by Brown.

Malena.— (Alt. 450 ft.) The first station on the railway line toward Medellin west of Puerto Berrio. It is in the heart of the virgin, bottomland forest. (No. 102; the number should be placed between Nos. 100 and 101.)

Expedition No. 8, March 9–11, 1915; 100 specimens.

Mamotoco.— (Lat. 11° 15′, long. 74° 17′; alt. 62 ft.) A village three miles east of Santa Marta.

Manaure.— (Lat. 10° 17′, long. 73° 16′; alt. 2600 ft.) A station twenty miles southeast of Valle Dupar, at the western base of the Western Andes. Visited by Simons. (No. 158.)

Masinga Vieja.— (Lat. 11° 16′, long. 73° 58′; alt. 600 ft.) A station on the Rio Manzanares, about four miles above Bonda. (No. 142.)

Matisuga.— (Lat. 7° 8′, long. 73° 8′; alt. 8500 ft.) A village in the Eastern Andes northeast of Bucaramanga visited by Wyatt. (No. 163.)

Medellin.— (Lat. 6° 8′, long. 75° 54′; alt. 4839 ft.) A city in the upper semi-arid Tropical Zone, the surroundings of which have been largely altered by human occupation. It was long the residence of Salmon and doubtless many of his specimens were collected in the immediate vicinity; but it is obvious that in many cases the name has a regional rather than definitely local value. (No. 37.)

Minca.— (Lat. 11° 12′, long 74° 2′; alt. 2000 ft.) A locality in the Santa Marta group fifteen miles from the coast at the head of the Rio Gairu, visited by Simons and by Smith. (No. 140.)

Miraflores.— (Alt. 6800 ft.) Name of a bungalow of Mr. Chas. J. Eder on the western slope of the Central Andes slightly north of east from Palmira. It is situated at the lower border of the cloud forest of the Subtropical Zone at its junction with the upper border of the here semi-arid and treeless Tropical Zone. Its faunal position is thus similar to that of our station at San Antonio in the Western Andes. To the east the forest extends to the summit of this ridge (8100 ft.) to the bottom of the succeeding valley, and summit of the following ridge, beyond which we did not penetrate. (No. 52.)

Expedition No. 1; April 18–30, 1911; 456 specimens.

Montana de Esmeralda.— (Alt. 8336 ft.) A locality in the Bogotá region at which Manuel Gonzalez collected.

Monteredondo.— (Alt. 4500 ft.) A posada in the Eastern Andes on the trail from Bogotá to Villavicencio, a few miles east of Quetame. The valley of the Rio Negro here widens and more tree-growth occurs than at any point along the trail toward Bogotá until one reaches the Temperate Zone forest above Chipaque. The tops of the higher ridges, however, are crowned with the cloud forest of the Subtropical Zone and would repay collecting. (No. 167.)

Expedition No. 7, February 28, March 1, 20 specimens.

Naranjito.— (Alt. 3900 ft.) A locality on the Pacific slope of the Western Andes above Buenaventura visited by Palmer.

Naranjo.— (Lat. 6° 55′, long. 73° 45′; alt. 2500 ft.) A small village in the forest on the trail between Bucaramanga and the Magdalena, visited by Wyatt. (No. 106.)

Naranjo.— (Alt. 1900 ft.) A locality on the Pacific slope of the Western Andes above Buenaventura, visited by André.

Nare.— A place on the Magdalena River, one day's sail above Puerto Berrio. (No. 100.)

Expedition No. 7; January 31, 1913, 4 specimens.

Nevada de Tolima.— A locality given by Stone in his paper on the Detwiler collection. The species recorded under this head indicate that the term does not mean strictly the "snows" or paramo of Tolima but apparently refer to the Central Andes in the Department of Tolima.

Noanamá.— (Lat. 4° 48′, long. 76° 50′; alt. 100 ft.) A town on the San Juan River in the Tropical Zone lowland forest of the Pacific coast region. Visited by Palmer, Miller and Allen. (No. 17.)

Expedition No. 3, Dec. 29, 1911; Jan. 2, 1912; 91 specimens.

Nóvita.— (Lat. 5°, long. 76° 53′; alt. 150 ft.) A small town on the Rio Tamaná near its junction with the San Juan, in the Tropical Zone lowland forest of the Pacific coast. Visited by Palmer, Miller and Allen. (No. 15.)

Expedition No. 3, Dec. 21–27, 1911; 178 specimens.

Ocaña.— (Lat. 8°, long. 73° 30′; alt. 3700 ft.) A town in a valley in the Eastern Andes which Wyatt made his base for three weeks. The surrounding country "is very bare and desolate; but the banks of small streams, which occur here and there, are generally fringed with vegetation." (No. 117.)

Onaca.— (Alt. 2000 ft.) A station in the Santa Marta region eighteen miles east-southeast of Santa Marta visited by the Smith Expedition. It is at "the lower border of the main mountain forest" (Smith).

Opon.— A place on the Magdalena River, one day's sail below Puerto Berrio. (No. 103.)

Expedition No. 7, January 27, 1913; 2 specimens.

Palo Hueco.— (Alt. 7250 ft.) A forested locality in the Bogotá region near Pacho, at which Manuel Gonzalez collected. (No. 91.)

Palomina.— (Alt. 5000 ft.) A locality in the Santa Marta group visited by Brown. (No. 146.)

Paramillo.— (Lat. 7° 18′, long. 75° 58′; alt. 12,500 ft.) A Temperate Zone island near the northern end of the Western Andes, and possibly the highest point in this range. Although collections were made at an altitude at which in the Central Andes typical Paramo species were found, only Temperate Zone species were secured. *Diglossa gloriosissima*, *Diglossa brunneiventris* and *Scytalopus canus* were among the more interesting birds taken. (No. 32.)

Expedition No. 8, January 24–February 1, 1915; 168 specimens.

Paramo of Chiruqua.— (Lat. 10° 51′, long. 73° 41′; alt. 11,000–15,000 ft.) A station in the Santa Marta Mts., visited by Brown. (No. 152.)

Paramo of Macatama.— (Alt. 11,000–15,000 ft.) A station in the Santa Marta group, visited by Brown. (No. 151.)

Paramo of Pamplona.— (Lat. 7° 3′, long. 73° 15′; alt. 10,000–11,500 ft.) A ridge of the Eastern Andes northeast of Bucaramanga; visited by Wyatt. (No. 162.)

Paramo of Santa Isabel.— (Alt. 12,500 ft.) A camp in a valley of the Paramo near the summit of the Central Andes north of the Quindio Trail. This is our only paramo station lying at the base of snow fields, the presence of which appears to be essential to the growth of highly developed paramo vegetation. The collections made here include some paramo species, unknown elsewhere in Colombia, and indicate that the Central Range is the main northward extension of the Andean System. (No. 49.)

Expedition No. 3, September 13–21; 200 specimens.

Paramo of Tamá.— (Lat. 7° 15′ S., long. 72° 30′ W.; alt. 8000 ft.) "A somewhat isolated mountain mass lying partly in Colombia and partly in Venezuela. The collecting station in Colombia was near the extreme headwaters of the Tachira River. Here the forest is somewhat broken and numerous meadows and grassy openings occur, while higher up there is a small area of open rocky mountain top with only narrow tongues of trees, but the extent of this is too limited to support a true 'paramo' fauna so the life is mostly that of a forest region" (W. H. Osgood). (No. 161.) Field Museum Expedition, W. H. Osgood and S. G. Jewett.

Pasto.— (Lat. 1° 13′, long. 77° 28′; alt. 8134 ft.) A city in the Arid Temperate Zone. No collections have been made here, but Pasto appears to have been the shipping place for some few lots of skins which were apparently secured in the forests of the Pacific slope. (See under *Buthraupis edwardsi.*) (No. 62.)

Patia Valley.— (Alt. 2370 ft.) A deep, narrow valley on the headwaters of the Patia, southwest of Popayan. It was described to us by Mervyn Palmer, who passed through it in travelling from Quito to Cali, as arid and treeless. Goodfellow, in journeying from Cali to Quito, also went through this valley, and speaks of seeing certain birds in it not met with elsewhere. It has never been zoölogically explored. Our plan to this end miscarried. (No. 59.)

Paturia.— A lagoon just off the east side of the Magdalena near Dique, visited by Wyatt. (No. 104.)

Pavas.— (Alt. 4400 ft.) A locality on the Pacific slope of the Western Andes, above Buenaventura, visited by Palmer. (No. 23.)

Peque.— (Alt. 5000 ft.) A small town at which porters were secured for the ascent of the Paramillo, at the lower limit of the cloud forest of the Subtropical Zone. (No. 33.)

Expedition No. 8, February 4, 1915; 28 specimens.

Pirico.— (Lat. 7° 50′, long. 73° 33′; alt. 5300 ft.) "Three or four huts" on a range of the Andes lying between Ocana and the Magdalena; visited by Wyatt. (No. 114.)

Plains of Tolima.— A locality given by Stone in his report on the Detwiler collections. Probably the country lying between the Magdalena River and Ibagüe through which this collector passed in going to the last-named city.

Plano de los Monos.— (Alt. 2600 ft.) A locality on the Pacific slope of the Western Andes above Buenaventura. Visited by André.

Pocuné.— (Alt. 1970 ft.) A station at which Salmon collected, on the Rio Pocuné, near Remedios. (No. 121.)

Popayan.— (Lat. 2° 26′, long. 76° 46′; alt. 5478 ft.) A city on the slopes of the mountains bordering the southern end of the Cauca Valley. The surroundings are chiefly grass-grown hills with some groups of trees and brush but no forest. Faunally the region lies at the border of the arid Subtropical and Temperate

Zones. Delattre did some collecting here about 1846; Goodfellow passed through in 1901; and there appear to have been some native-made skins sent through Popayan from this general region, but the first important work in the Andes west of Popayan was done by Miller and Richardson. (See under Cocal, Gallera, Cerro Munchique and Andes w. of Popayan.) (No. 56.)

Expedition No. 2.

PORTRERRAS.— (Lat. 7° 26′, long. 73° 34′; alt. 7000 ft.) A hut, six days' journey from Ocaña on the road to Bucaramanga, visited by Wyatt. The surrounding country is forested. (No. 112.)

PUEBLO RICO.— (Lat. 5° 10′, long. 76° 9′; alt. 5200 ft.) A locality near the headwaters of the San Juan on the western slope of the Western Andes, visited by Palmer. (No. 13.)

PUEBLO VIEJO.— (Lat. 10° 58′, long. 73° 36′; alt. 8000 ft.) A locality in the Santa Marta group visited by Brown. (No. 150.)

PUENTE ANDALUCIA.— (Alt. 8263 ft.) A locality in the Bogotá region near Subachoque at which Manuel Gonzalez collected. (No. 90.)

PUERTO BERRIO.— (Alt. ab. 400 ft.) A town on the west bank of the middle Magdalena River, terminus of the railroad for Medellin. The immediately surrounding country is low and swampy and covered with bush-grown morasses or low woods. (No. 101.)

Expedition No. 7; January 29, 30; 117 specimens.

PUERTO NACIONAL.— (Lat. 8° 15′, long. 73° 50′; alt. near sea-level.) A port on the east side of the Magdalena in the arid Tropical Zone at which Wyatt disembarked on his journey to Ocaña. (No. 123.)

PUERTO VALDIVIA.— (Lat. 7° 10′, long. 75° 48′; alt. 600 ft.) A station on the right bank of the lower Cauca at the head of navigation and at the base of the western slope of the Central Andes. The Western Andes rise from the left bank of the river and both slopes are heavily forested. Collections made here show that many species have entered this valley from the Atrato Valley, but that in a number of cases they are represented in both valleys by quite different forms. (No. 35.)

Expedition No. 8; December 14–26, 1914; 334 specimens.

PUERTO WILCHE.— (Lat. 7° 8′, long. 74; alt. 400 ft.) A port on the Magdalena near "Dique" whence Wyatt embarked on his homeward journey. (No. 105.)

PURIFICACION.— (Lat. 3° 55′, long. 75° 10′; alt. 1138 ft.) A town on the upper Magdalena River between Giradot and Neiva from which come some native-made skins. (No. 68.)

QUETAME.— (Alt. 4600 ft.) A town in the valley of the Rio Negro in the Eastern Andes on the trail from Bogotá to Villavicencio. A scanty tree-growth borders the river and inflowing streams but the sides of the valley are usually covered with grasses or bushes. The barren hills bring certain Temperate Zone species down to this altitude where, along the streams, Tropical Zone species are found. A few Subtropical Zone species also occur and representatives of three zones therefore meet at this place. (No. 168.)

Expedition No. 7; February 25–27; 98 specimens.

QUIBDÓ.— (Lat. 5° 46′, long. 76° 44′; alt. 138 ft.) An important town at the head of steamer navigation on the Atrato, from which Mrs. Kerr sent 40 specimens. (No. 8.)

QUINDIO.— An indefinite term doubtless applied to any part of the Quindio Trail across the Central Andes from Ibagüe to Cartago. Spelled also Quindiu.

Remedios.— (Lat. 7°, long. 74° 45′; alt. 2360 ft.) One of Salmon's most important stations, situated on the Rio Ité which flows into the Magdalena. (No. 120.)

Remolino.— A place on the Lower Magdalena, near Calamar. (No. 129.)
Expedition No. 7; January 25, 1913; 5 specimens.

Retiro.— (Lat. 5° 58′, long. 75° 50′; alt. 8000 ft.) A town in the Central Andes, twenty-five miles south of Medellin, at which Salmon collected. (No. 42.)

Ricaurte.— (Alt. 5000 ft.) A station in the Subtropical Zone in southwestern Colombia, said to be at an altitude of about 4500–5000 feet. It is described by Richardson as being on the upper edge of the forested zone which extends upwards from the coast. (No. 31.)
Expedition No. 6; September 12–30, 1912; 107 specimens.

Rio Andagueda.— One of the sources of the Atrato from which Mrs. Kerr sent eleven specimens. (No. 10.)

Rio Cajon.— A small tributary of the San Juan, in western Colombia, visited by Palmer.

Rio Calima.— A tributary of the San Juan which it joins near its mouth. Visited by Palmer.

Rio Dagua.— A river which rises on the western slopes of the Western Andes above Caldas and flows into Chocó Bay at Buenaventura. It is navigable as far as Cisneros at its junction with Las Petitas. Collections have been made by Hopke, André, Rosenberg, and Richardson at various stations on this river.

Rio Frio.— (Lat. 4° 11′, long. 76° 27′; alt. 3500 ft.) A station on the east bank of the Cauca River in heavy, lowland tropical forest. With the exception of Guengüe it was our only collecting point of this nature in the upper Cauca Valley. (No. 50.)
Expedition No. 3; November 23–December 2, 1911; 143 specimens.

Rio Garrapatas.— A tributary of the Rio Sipi in western Colombia. Visited by Palmer.

Rio Meta.— Principal Colombian affluent of the Orinoco, the navigable headwaters of which lie at Barrigon within three or four days' mule journey east of Villavicencio. Gonzalez collected seventy-nine birds at Barrigon, and the British Museum Catalogue of Birds lists specimens collected on the Meta by F. H. Wheeler.

Rio Nercua.— One of the tributaries of the Truando (which see) which it enters some thirty-six miles from the junction of the latter with the Atrato. Visited by the Michler Expedition. (No. 4.)

Rio San Juan.— One of the more important rivers of western Colombia. On its banks are situated Noanamá, and other localities visited by Palmer, Miller, and Allen.

Rio Toché.— (Alt. 6800 ft.) A valley in the heart of the Central Andes but on Magdalena drainage. The country surrounding the Posada at El Pie de San Juan lacks forest growth, but the head of the valley is heavily wooded and would repay more attention than we gave it. A distinct Towee-Finch (*Atlapetes flaviceps*) was collected here. (No. 72.)
Expedition No. 3; October 23–27, 1911; 126 specimens.

Rio Truando.— A tributary of the Atrato which it enters from the west about ninety miles from the Gulf of Urubá. The collections of the Michler Expedition were made chiefly on this river and the Nercua, one of its branches. (No. 3.)

Salencio.— (Alt. 5500 ft.) A settlement on the eastern slope of the Western Andes, west of Cartago on the trail to the San Juan region. It lies just below the lower limit of the Subtropical Zone forest. (No. 45.)

Expedition No. 3; December 9, 10, 1911; 28 specimens.

Salento.— (Lat. 4° 40′, long. 75° 50′; alt. 6500 ft.) The last town encountered before crossing the Quindio Trail from the Cauca to the Magdalena Valleys. There is no collecting ground in the immediate vicinity of the town, but the neighboring Boquilla Valley with the wooded barrancas opening into it and the forests on the first ridge to the west (El Roble) were rich in bird-life. (No. 46.)

Expedition No. 2; September 25–October 2; October 31–November 6; November 8–13, 1911; 342 specimens.

San Agustin.— (Alt. 5040 ft.) A town at the upper limit of the Tropical Zone near the headwaters of the Magdalena. The immediate surroundings are semi-arid and open, with timber only along the streams. Collections were made both near the town and in the subtropical forests distant some hours. (No. 66.)

Expedition No. 5; April 9–25, 1912; 253 specimens.

San Antonio.— (Alt. 6600 ft.) A small settlement on the eastern slope of the Western Andes a few hundred feet below the pass of Las Cruces, on the mule trail from Buenaventura to Cali. It is one of our most important stations and has also been visited by André and Palmer. The crest of the range and western slope are covered with highly developed subtropical forest. The eastern slope, after the first hundred feet, is grass-covered and devoid of trees or bushes. A number of species of the arid tropics therefore ascend nearly to the pass. On the western slope, forest descends to La Tigra (5685 ft.). (No. 54.)

Expedition No. 1, January 4–February 21; March 30–April 7, 1911; 766 specimens.

San Francisco.— (Alt. 6000 ft.) A locality in the Santa Marta group visited by Brown.

San Joaquim, Bahia del Chocó = Buenaventura.

San José.— (Alt. 5000 ft.) A locality in the Santa Marta group visited by Simons.

San José.— (Lat. 3° 50′, long. 76° 50′; alt. 382 ft.) A small settlement on the Dagua at the western base of the Western Andes, some twenty-five miles east of Buenaventura and for years the terminus of the railway from that point. The rainfall is high, the region densely forested; trails are few and collecting difficult. Visited by André and Hopke. (No. 20.)

Expedition No. 1; November 27–December 18, 1910; 37 specimens.

San Lorenzo.— (Alt. 7000–9000 ft.) A range of the Santa Marta group. (No. 143.)

San Luis.— Bitaco Valley.— (Alt. 4400 ft.) A locality on the Pacific slope of the Western Andes above Buenaventura visited by Palmer.

San Martin.— (Lat. 3° 43′, long. 73° 59′; alt. 1249 ft.) A town at the eastern base of the Eastern Andes from which native-made skins are sent to Bogotá. (No. 170.)

San Miguel.— (Lat. 11° 2′, long. 73° 41′; alt. 7500 ft.) A station in the Santa Marta group visited by Brown. (No. 147.)

San Nicolas.— (Lat. 6° 53′, long. 73° 43′; alt. about 3000 ft.) A hut west of Bucaramanga at the border of the Magdalena river forest, visited by Wyatt. (No. 107.)

San Sebastian.— (Alt. 6700 ft.) A locality in the Santa Marta group visited by Brown.

Santa Cruz.— (Lat. 73° 37′, long. 11° 2′; alt. 8000 ft.) A locality in the Santa Marta group visited by Brown. (No. 148.)

Santa Elena.— (Alt. 9000 ft.) One of the most important of Salmon's stations the exact location of which Sclater and Salvin (P. Z. S., 1879, p. 489) were unable to discover. It lies on the summit of the first ridge of the Central Andes but a short distance east of Medellin. Deforestation and cultivation appear to have wrought a change in conditions which are doubtless responsible for the mingling of Subtropical and Temperate Zone species at this place. (No. 38.)

Expedition No. 8; November 15–23; December 1–4, 1914; 282 specimens.

Santa Isabel.— (Alt. 12000 ft.) A camp near the junction of the Temperate Zone forest with the Paramo of Santa Isabel. The bird-life is like that of Laguneta. (No. 48.)

Expedition No. 3; September 21–23, 1911; 75 specimens.

Santa Marta.— (Lat. 11° 15′, long. 74° 20′; alt. sea-level.) An important seaport near the foot of the San Lorenzo range of the Santa Marta group. The immediate surroundings are semi-arid, cacti and other zerophytic forms predominating. Visited by Smith and Brown. The latter's collections are said by Bangs (Proc. Biol. Soc. Wash., XII, 1898, p. 131) to have been made at altitudes of "from 500 to 1500 ft." (No. 138.)

Santa Rosa.— (Lat. 8° 2′, long. 73° 32′; alt. about 5000 ft.) A "hut" visited by Wyatt, on the western slope of a range lying between Ocaña and the Magdalena, situated below Alto, which see. (No. 119.)

Siato. (Alt. 5200 ft.) A locality on the Rio Siato near Pueblo Rico, on the western slope of the Western Andes, visited by Palmer.

Sibaté.— (Alt. 8750 ft.) A town at the southern end of the Bogotá Savanna.

Sinu River.— An important river of northern Colombia from which Mrs. Kerr sends 17 specimens.

Sipi.— (Lat. 4° 6′, long. 76° 27′; alt. 150 ft.) A locality on the Rio Sipi visited by Palmer. (No. 18.)

Suba.— (Lat. 4° 43′, long. 74° 22′; alt. 8600 ft.) A reed-grown marsh bordering the Bogotá River some six miles from the city of Bogotá, which until recently appears to have escaped the attention of collectors. Type-locality of *Cistothorus apolinari, Agelaius xanthocephalus bogotensis, Ixobrychus exilis bogotensis* and *Habroura pectoralis bogotensis.*

Subia.— (Alt. 5860 ft.) A locality in the Bogotá region, near La Mesa, at which Manuel Gonzalez collected. (No. 87.)

Susumuco.— A locality in the Bogotá region on the humid eastern slopes of the Eastern Andes, between Monteredondo and Buena Vista, much frequented by native collectors. (No. 166.)

Tadó.— (Lat. 5° 9′, long. 76° 31′; alt. 230 ft.) A locality on the Rio San Juan north of Noanamá visited by Palmer. (No. 11.)

Tatamá Mountain.— (Lat. 5° 8′, long. 76° 10′; alt. 2794–8000 ft.) A detached peak of the Western Andes visited by Palmer. (No. 12.)

Tenasucá.— (Alt. 5260 ft.) A locality in the Bogotá region, above La Mesa, at which Manuel Gonzalez collected. (No. 86.)

Tocaimito.— (Alt. 10,000 ft.) A ranch on the trail from Bogotá to Villavicencio, near the crest of the pass on the first ridge east of Bogotá. It lies near the junction of the Temperate and Paramo Zones. (No. 81.)

Expedition No. 7; March 19; 18 specimens.

TUMACO.— (Lat. 1° 49′, long. 78° 53′; alt. sea-level.) The smaller of Colombia's two Pacific coast ports. It is situated on a small island, "dry, sunny, and sandy with only stunted vegetation, and, on one side, mangroves." (No. 28.)

Expedition No. 6; July 28–August 1, 1912; 78 specimens.

TURBACO.— A locality in the arid coastal zone near Carthagena from which Mrs. Kerr sent us 42 specimens. (No. 133.)

TURBO.— (Lat. 8° 6′, long. 76° 41′; alt. sea-level.) A small village in the Gulf of Urabá, or Darien, nearly opposite the delta of the Atrato, visited by the Michler Expedition. (No. 1.)

VALLE DE LAS PAPPAS.— (Alt. 10,500 ft.) A valley in the Central Andes south of Popayan at the border of the Alpine and Temperate Zones. (No. 63.)

Expedition No. 4; March 22–28, 1912; 92 specimens.

VALLE DUPAR.— (Lat. 10° 21′, long. 73° 31′; alt. 376 ft.) A town on the plain between the Santa Marta group and the Eastern Andes near the mouth of the Rio Guatapuri, visited by Simons.

VALPARAISO. (Alt. 4500–5500 ft.) A locality in the Santa Marta group, twenty miles southeast of Santa Marta; visited by the Smith Expedition.

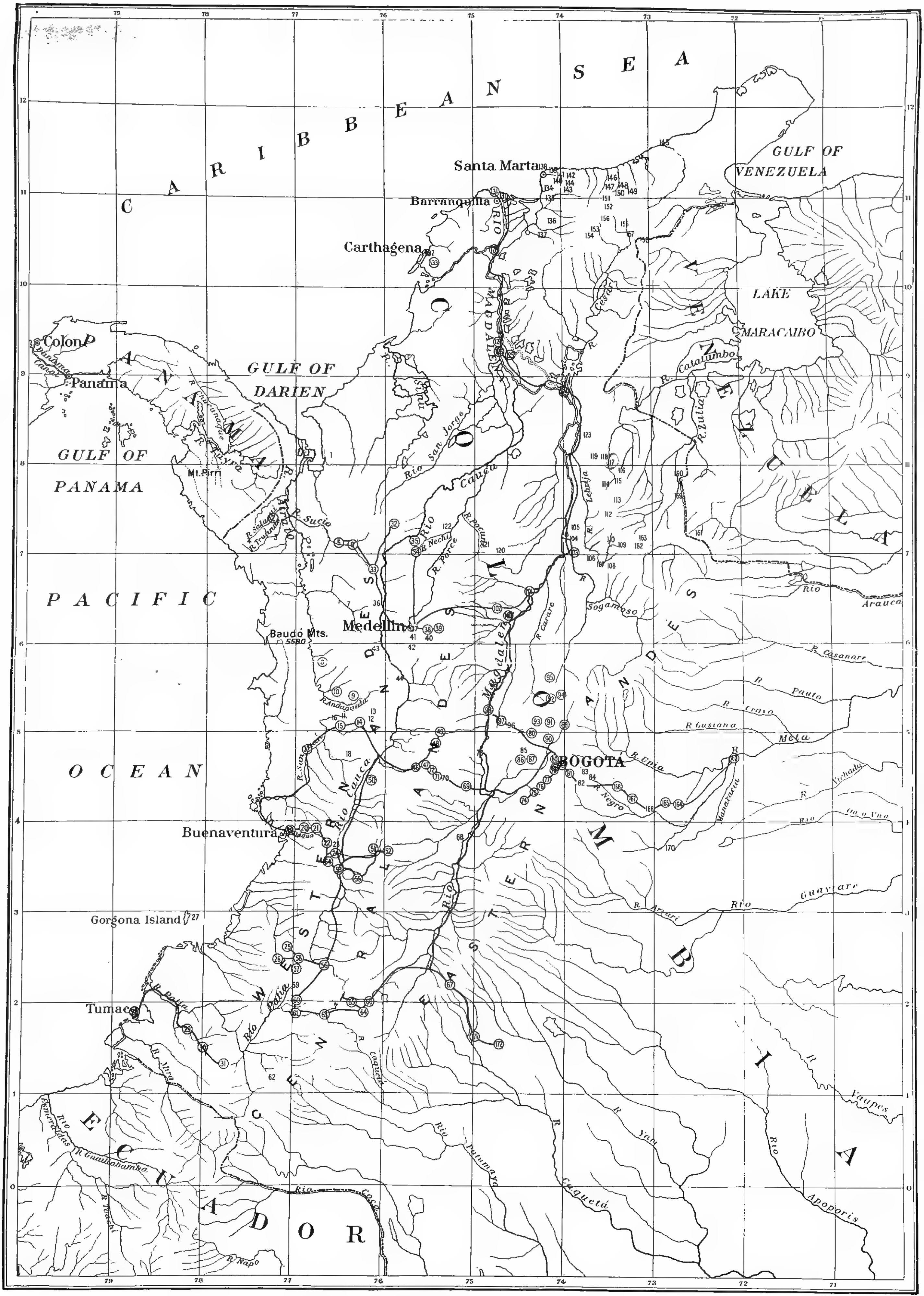
VARRUD.— A place on the lower Magdalena River, one day's sail above Calamar. (No. 126.)

Expedition No. 8; November 5, 1914; 10 specimens.

VETAS.— (Lat. 7° 3′, long. 73° 25′; alt. 9500 ft.) A locality northeast of Bucaramanga visited by Wyatt. (No. 109.)

VILLAVICENCIO.— (Lat. 4° 15′, long. 73° 50′; alt. 1400 ft.) A city of some importance at the foot of the Eastern Andes. The mountain forest touches its western limits but the country to the east is flat and, at least within the first few miles, largely devoted to grazing and agriculture, but there is considerable wooded growth along the numerous streams which here leave the Andes. Birds were here exceedingly abundant. Many Bogotá birds have been collected in this vicinity. (No. 164.)

Expedition No. 7; March 6–14, 337 specimens.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Santa Marta
Barranquilla
Carthagena
RIO MAGDALENA
GULF OF VENEZUELA
LAKE MARACAIBO
VENEZUELA
Colon
Panama Canal
Panama
PANAMA
GULF OF DARIEN
GULF OF PANAMA
Mt. Pirri
R. Sucio
R. Atrato
Rio Sinu
Rio San Jorge
Rio Cauca
R. Nechi
R. Porce
R. Cocorna
R. Lebrija
R. Zulia
R. Catatumbo
R. Cesar
PACIFIC OCEAN
Baudó Mts.
5580
Medellin
R. Andagueda
R. San Juan
Buenaventura
Gorgona Island
Tumaco
R. Patia
Rio Patia
R. Mira
R. Carare
Sogamoso
Magdalena
BOGOTA
R. Upia
R. Negro
Manacacia
R. Gusiana
R. Cravo
R. Pauto
R. Casanare
Rio Arauca
Meta
R. Vichada
Rio Vaupes
R. Ariari
Rio Guaviare
WESTERN ANDES
CENTRAL ANDES
EASTERN ANDES
COLOMBIA
R. Caqueta
Rio Putumayo
R. Yari
R. Vaupes
Rio Apoporis
ECUADOR
Rio Esmeraldas
R. Guailabamba
R. Toachi
Rio Coca
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GOLDSCHMIDT & HAMPEL N Y

KEY TO COLOMBIAN COLLECTING STATIONS

Numbers enclosed in a circle indicate collecting stations of the American Museum's expeditions; the lines connecting these stations show the routes followed.

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A LIST OF THE MORE IMPORTANT FAUNAL PAPERS RELATING TO COLOMBIAN BIRDS.

The following titles include references to the comparatively few regional papers which have been published on Colombian birds as such. Additional data on the distribution of birds in Colombia will be found in Sclater and Salvin's Nomenclator Avium Neotropicalium (1873), the Catalogue of Birds of the British Museum (1874–1895), Ridgway's Birds of North and Middle America (1901–19—), Brabourne and Chubb's 'Birds of South America' (1912) and other general works.

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Describing five new species and subspecies collected by Mervyn G. Palmer chiefly at San Antonio and recording sixteen others (see *antea*, p. 18).

1910. Bangs, Outram. New or Rare birds in Western Colombia. Proc. Biol. Soc. Wash., XXIII, pp. 71–76.

Describing nine new species and subspecies collected by Mervyn G. Palmer between Buenaventura and San Antonio, and commenting on five others (see *antea*, p. 18).

1911. Hellmayr, C. E. A Contribution to the Ornithology of Western Colombia. London. Proc. Zool. Soc., 1911, pp. 1084–1213.

201 species (see *antea*, p. 18).

Note. — For a general bibliography of literature relating to Colombia, consult Phanor J. Eder's standard work on 'Colombia,' published by Charles Scribner's Sons.

ERRATA.

Page 112, for *Manacus manacus melanochlamys* read *Manacus manacus leucochlamys.*

" 221, for *Tachybapterus* read *Tachybaptus.*

" 225, for PARRIDÆ read JACANIDÆ.

" " for *Jacana spinosa* read *Jacana jacana.*

" 234 and 235, for *erythropthalma* read *erythrophthalma.*

" 237, for PLOTIDÆ read ANHINGIDÆ.

" 249, for *Rostrhamphus* read *Rostrhamus.*

" 276, for *A. occellatus* read *A. ocellatus.*

" 286, for *Agyrtria viridiceps* read *Agyrtrina viridiceps;* for *Agyrtrina fluvialitis* read *Agyrtrina fluviatilis;* for *Thaumatias fluvialitis* read *Thaumatias fluviatilis.*

" 307, for *Opisthroprora* read *Opisthoprora;* for *Ramphomicron microhynchum* read *Ramphomicron microrhynchum.*

" 307, 309 for *Cyanthus* read *Cynanthus.*

" 312, for *Klais guimete* and *Trochilus guimete* read *Klais guimeti* and *Trochilus guimeti.*

" 323, for *Diplopteryx* read *Diplopterus.*

" 340, for *Notharcus* read *Notharchus.*

" 482, for *Allocopterus* read *Allocotopterus.*

" 534, for *Plantesticus* and *Turdus gymnopthalmus* read *Planesticus* and *Turdus gymnophthalmus.*

" 608, for *violarvata* read *violilavata.*

INDEX TO VOLUME XXXVI.

New names of genera, species, and subspecies are printed in heavy-faced type, also the main references in a series of references.

abbreviatus, Ramphastos, 329.
    Ramphastos ambiguus, 328, **329**.
abditivus, Manacus manacus, 112, **485**, 486.
Aburria aburri, 197.
    carunculata, 197.
aburri, Aburria, 197.
    Penelope, 197.
Accipiter bicolor, 242.
    bicolor schistochlamys, 242.
    superciliosus, 241.
    tinus, 241.
    ventralis, 242.
Accipitriformes, 238.
accola, Myiopagis placens, 457.
    Myiopagis viridicata, **457**, 458.
Acestrura mulsanti, 311.
Acknowledgements, 8.
Acrochordopus leucogonys, 451.
    subviridis, 451.
    zeledoni, 451.
Acropternis orthonyx, 362.
Acrorchilus erythrops griseigularis, 407.
Actitis macularia, 224.
acutipennis, Chordeiles acutipennis, 272.
    Hapalocercus, 445.
Adelomyia cervina, 304.
    melanogenys, 304.
Ægialitis collaris, 223.
    semipalmata, 223.
ænea, Glaucis, 280.
    Glaucis hirsuta, 280.
ænigma, Sapayoa, 488.
ænops, Creciscus, 218.
    Porzana, 218.
æqualis, Stelgidopteryx ruficollis, 505.
æquatorialis, Aglæactis cupripennis, 299.
    Anæretes parulus, 163, **447**.
    Androdon, 279.
æquatorialis, Anoplops bicolor, 381.
    Campylopterus, 285.
    Campylopterus obscurus, 285.
    Cistothorus, 55, **517**, 518.
    Dendroica petechia, 545.
    Dendrornis triangularis, 419.
    Molothrus bonariensis, 631.
    Momotus, 272.
    Momotus æquatorialis, 272.
    Penelope, 195.
    Phæolæma, 296.
    Phaiolaima rubinoides, 296.
    Popelairia conversi, 312.
    Thamnistes, 369.
    Xiphorhynchus æquatorialis, 419.
æquinoctialis, Craspedoprion, **433**, 434.
    Cyclorhynchus, 433.
    Geothlypis, 548.
    Motacilla, 548.
æruginosa, Aratinga æruginosa, 257.
æruginosus, Conurus, 257.
    Psittacus, 257.
æstiva Dendrœca, 545.
    Dendroica 545.
    Dendroica æstiva, 545.
    Motacilla, 545.
    Pyranga, 613.
æthiops, Oryzoborus funereus, 556.
affinis, Cacicus hæmorrhous, 628.
    Cassicus, 628.
    Cyanocorax, 126.
    Cyanocorax affinis, 636.
    Fuligula, 235.
    Glaucis, 280.
    Glaucis hirsuta, 280.
    Marila, 235.
Agamia agami, 229.
agami, Agamia, 229.
    Ardea, 229.

Agathopus micropterus, 261.
Agelaius icterocephalus bogotensis, 161, 445, **632**.
  icterocephalus icterocephalus, 632.
agilis, Anæretes, 448.
  Euscarthmus, 448.
Aglæactis cupreipennis, 299.
  cupripennis æquatorialis, 299.
  cupripennis cupripennis, 299.
Aglaia cæruleocephala, 598.
  chilensis, 593.
  fanny, 598.
  gyroloides, 596.
  peruviana, 596.
agnatus, Furnarius, 126, 131. **400**.
Agrilorhinus humeralis, 581.
  personatus, 582.
Agyrtria franciæ, 287.
Agyrtrina fluviatilis, 286, 660.
  viridiceps, 286, 660.
  viridissima, 286.
Ajaia ajaja, 228.
Ajaja ajaja, 228.
ajaja, Ajaia, 228.
  Ajaja, 228.
  Platalea, 228.
alarum, Xiphorhynchus lachrymosus, 421.
Alaudidæ, 554.
alberti, Crax, 194.
albescens, Synallaxis, 403.
albicans, Thamnophilus, 368.
  Thamnophilus radiatus, 122, **368**.
  Troglodytes musculus, 520.
albicincta, Hemiprocne, 277.
  Streptoprocne albicincta, 161.
  Streptoprocne zonaris, 276, **277**.
albicollis, Caprimulgus, 274.
  Legatus, 459.
  Legatus albicollis, 459.
  Nyctidromus albicollis, 274.
  Saltator, 563.
  Tyrannus, 459.
albidiedema, Ochthœca, 428.
  Setophaga, 428.
albifrenatus, Atlapetes, 576.
  Buarremon, 576.
albifrons, Conirostrum, 583.
albigula, Myrmopagis axillaris, 375.
albigula, Myrmotherula, 375.
  Corethrura, 218.
albigularis, Creciscus, 218.
  Porzana, 218.
  Sclerurus, 415.
  Sclerurus albigularis, 415.
  Synallaxis, 403.
  Synallaxis albescens, 403.
albilatera, Diglossa, 581.
albilateralis, Diglossa, 581.
  Henicorhina prostheleuca, **524**.
albilinea, Columba albilinea, 203.
albilineata, Columba, 203.
albitarse, Syrnium, 254.
albitarsus, Ciccaba, 254.
albitemporalis, Chlorospingus, 618.
albiventris, Elænia, 456.
  Hirundo, 501.
  Merula, 536.
albivertex, Elænia, 455.
albivitta, Aulacorhamphus, 334.
  Aulacorhynchus albivitta, **334**, 335.
  Chæmepelia passerina, 208.
  Chamæpelia, 208.
  Donacobius atricapillus, 106.
  Pteroglossus, 334.
albocinereus, Sirystes, 463.
albocristata, Sericossypha, 618.
albocristatus, Tangara, 618.
albofrenatus, Tanagra, 576.
albogularis, Ciccaba, 254.
  Platyrhynchus, 433.
  Platytriccus, 433.
  Platytriccus mystaceus, 433.
  Schistes, 310.
albo-gularis, Syrnium, 254.
albo-lineatus, Dendrocolaptes, 423.
albolineatus, Picolaptes, 423.
albovittatus, Donacobius, 530.
  Donacobius atricapillus, 530.
Alcedinidæ, 266.
Alcedo amazona, 266.
  americana, 266.
  inda, 267.
  torquata, 266.
alector, Crax, 194.
alfredi, Ostinops alfredi, 626.
aliciæ, Hylocichla, 537.
  Hylocichla aliciæ, 537.

aliciæ, Turdus, 537.
alixii, Clytoctantes, 369.
Allen, Arthur A., work by, 9, 10, 32–45.
Allen, J. A., publications by, 19, 184.
alleni, Chloronerpes rubiginosus, 348.
  Grallaria, 395.
  Pogonotriccus, 446.
Allocotopterus deliciosus, 482, 660.
alnorum, Empidonax trailli, 473.
alogus, Rhopoctites, 412.
alpestris, Otocoris, 178.
alpina, Muscisaxicola alpina, 432.
altera, Corapipo altera, 485.
  Corapipo leucorrhoa, 485.
altissima, Streptoprocne zonaris, 161, **276**.
amabilis, Polyerata, 286.
  Trochilus, 286.
amaryllis, Lesbia, 310.
amaurocephalus, Leptopogon, 450.
amaurogaster, Pheugopedius mystacalis, 516.
Amaurolimnas concolor guatemalensis, 217.
Amazilia riefferi, 288, 289.
  tzacatl jucunda, 289.
amazilia, Chamæpelia, 209.
Amazillis fuscicaudata, 288.
Amazona amazonica, 262.
  inornata, 262.
  mercenaria, 262.
  ochrocephala ochrocephala, 262.
  ochrocephala panamensis, 262, **263**.
  salvini, 263.
amazona, Alcedo, 266.
  Ceryle, 266.
  Chloroceryle, 266.
amazonia, Ceryle, 266.
Amazonian Fauna, 133.
amazonica, Amazona, 262.
  Synallaxis rutilans, 406.
amazonicus, Psittacus, 262.
amazonina, Hapalopsittaca, **264**, 265.
amazoninus, Psittacus, 264, 265.
ambiguus, Trogonurus, 315.
  Ramphastos ambiguus, 328.
Amblycercus holosericeus flavirostris, 629.
  holosericeus holosericeus, 629.
Amblycercus solitarius, 629.
americana, Alcedo, 266.
  Ceryle, 266.
  Ceryle americana, 266.
  Chloroceryle americana, 266.
  Emberiza, 566.
  Euspiza, 566.
  Fulica americana, 220.
  Spiza, 566.
americanus, Coccyzus, 319.
  Coccyzus americanus, 319.
  Cuculus, 319.
  Falco, 239.
  Ibycter, 239.
Amizilis tzacatl jucunda, 289.
  tzacatl tzacatl, 288.
Ammodramus savannarum australis, 566.
  savannarum caribæus, 566.
  savannarum caucæ, 566.
Ampelion cinctus, 498.
Ampelis arcuata, 498.
  cinctus, 498.
  cinerea, 494.
  nattererii, 499.
  riefferi, 498.
  rubricristata, 499.
  rufaxilla, 500.
Anabates boissonneauti, 408.
  flammulatus, 412.
  infuscatus, 410.
  leucopthalmus, 409.
  melanorhynchus, 409.
  pyrrhodes, 411.
  ruficaudatus, 411.
  subalaris, 413.
  turdinus, 409.
Anabazenops mentalis, 413.
Anæretes agilis, 448.
  parulus æquatorialis, 163, **447**.
anais, Petasophora, 295.
analis, Formicarius, 52.
  Scytalopus, 361.
analoides, Catamenia analis, 161.
  Catamenia analoides, 560.
Anas bicolor, 233.
  cyanoptera, 234.
  discors, 233.
  dominica, 235.
  erythropthalma, 234.

Anas moschata, 233.
Anatidæ, 233.
Ancistrops strigilatus, 413.
Andalucia, explorations about, 46.
andicola, Leptasthenura, 402.
  Xanthoura yncas, 638.
Andigena hypoglaucus, 330.
  nigrirostris, 161, 331.
  nigrirostris nigrirostris, 331.
  nigrirostris occidentalis, 331, **332**.
  nigrirostris spilorhynchus, **331**, 332.
  spilorhynchus, 331, 332.
andinus, Sclerurus mexicanus, 415.
andium, Nettion, 233.
  Querquedula, 231.
andrei, Crypturus soui, 191.
Androdon æquatorialis, 279.
angelica, Dacnis, 584.
angolensis, Loxia, 556.
angustifrons, Cassicus, 627.
  Ostinops, 627.
angustipennis, Chlorostilbon, 290.
  Trochilus, 290.
Anhinga anhinga, 237.
anhinga, Anhinga, 237.
  Plotus, 237.
ani, Crotophaga, 323.
Anis, 319.
annectens, Pseudomyiobius, 441.
  Pseudotriccus, 441.
Annual Rainfall at certain stations on the Pacific R. R., 83; at La Manuelita, Cauca Valley, 1900–1910, 83.
Anoplops bicolor æquatorialis, 381.
  bicolor bicolor, 382.
  bicolor daguæ, 382.
Anseriformes, 233.
Antbirds, 363.
Anthocephala berlepschi, 295.
  longirostris stewartæ, 311.
Anthony, H. E., work by, 6.
anthophilus, Phæthornis, 282.
  Phœthornis, 282.
  Trochilus, 282.
Anthoscenus longirostris longirostris, 311.
anthracina, Pipra leucocilla, 480.
Anthracothorax iridescens, 295.
  nigricollis nigricollis, 295.
Anthus bogotensis, 554.
antioquensis, Microcerculus squamulatus, 528.
  Picumnus granadensis, 357, **358**.
Antioquia, collections in, 16.
antioquiæ, Compsocoma somptuosa, 605.
  Pseudochloris citrina, **571**.
  Zenaida, 161.
  Zenaida ruficauda, **207**, 208.
antisiensis, Pharomachrus, 313.
  Siptornis, 406.
  Synallaxis, 406.
  Trogon, 313.
Antrostomus ocellatus, 276.
  rosenbergi, 275, **276**.
Anurolimnas castaneiceps, 217.
  hauxwelli, 218.
apicalis, Myiarchus, 476.
apolinari, Cistothorus, 9, 445, **518**.
aquila, Eutoxeres, 284.
  Eutoxeres aquila, 284.
  Trochilus, 284.
aquilinus, Ibycter, 239.
Ara ararauna, 256.
  chloroptera, 256.
  macao, 256.
  militaris, 257.
  militaris militaris, 257.
  severa, 257.
Aramides cajanea cajanea, 217.
  cajanus, 217.
  cayennensis, 217.
ararauna, Ara, 256.
  Psittacus, 256.
Aratinga æruginosa æruginosa, 257.
  æruginosa occidentalis, 257, 258.
  wagleri, 257.
arcæi, Tangara florida, 593.
arcuata, Ampelis, 498.
  Euchlornis, 498.
Ardea agami, 229.
  cærulea, 229.
  candidissima, 229.
  cocoi, 228.
  egretta, 228.
  erythromelas, 231.
  lineata, 230.
  nævia, 229.
  pileata, 230.
  striata, 230.

Ardea tricolor, 229.
Ardeidæ, 227.
Ardeiformes, 227.
ardens, Phœnisoma, 614.
  Piranga leucoptera, 614.
  Pyranga, 614.
ardesiacus, Contopus, 473.
  Dysithamnus ardesiacus, 373.
ardosiaca, Tyrannula, 473.
ardosiacus, Myiochanes ardosiacus, 473.
  Sayornis, 472.
Argicus macrodactylus, 341.
armillata, Cyanocitta, 639.
  Cyanolyca armillata, 639.
armillatus, Cyanocorax, 639.
Arremon atropileus, 620.
  aurantiirostris erythrorhynchus, 573.
  aurantiirostris occidentalis, 573, **574**.
  axillaris, 574.
  conirostris, 569.
  erythrorhynchus, 573.
  flavopectus, 618.
  gutturalis, 575.
  rubrirostris, 620.
  spectabilis, 573.
  superciliaris, 621.
Arremonops caneus, 569.
  chrysoma richmondi, 113, 569, 570.
  conirostris, 126, 620.
  conirostris canens, 569.
  conirostris chrysoma, 113, 569, **570**.
  conirostris conirostris, 113, 122, **569**, 570.
  conirostris inexpectata, 113, 122, **570**.
  venezuelensis, 569.
arremonops, Oreothraupis, 622.
  Saltator, 622.
Arundinicola leucocephala, 431.
asemus, Rhynchocyclus sulphurescens, 434.
Asio accipitrinus bogotensis, 9.
  flammeus bogotensis, 163, 164, 252.
  flammeus flammeus, 252.
  stygius, 252.
assimilis, Automolus, 408.
  Buarremon, 160, 577.
  Hyloctistes subulatus, 408.
  Megaquiscalus major, 635.
assimilis, Quiscalus, 635.
  Rhynchocyclus sulphurescens, 435.
  Tanagra, 577.
  Trogon, 314.
  Trogonurus, 161, **314**.
Astragalinus psaltria columbianus, 564.
Asturina magnirostris, 243, 244.
  nitida, 243.
  ruficauda, 244.
  schistacea, 247.
Atalotriccus pilaris pilaris, 126, 444.
  pilaris venezuelensis, 444.
aterrima, Diglossa, 581.
Atlapetes albifrenatus, 576.
  crassus, 577.
  flaviceps, 574.
  fusco-olivaceus, 575.
  gutturalis, 151, 154; distribution of, figured, 154.
  gutturalis brunnescens, 154.
  gutturalis gutturalis, 575.
  latinuchus elæoprorus, 575.
  latinuchus latinuchus, 575.
  pallidinucha papallactæ, 576.
  pallidinuchus obscurior, 576.
  pallidinuchus pallidinuchus, 576.
  pallidinuchus papallactæ, 576.
  semirufus, 577.
  schistaceus, 29, **576**.
atra, Schistochlamys, 123, 136, **623**.
  Tanagra, 623.
atrata, Catharista, 238.
Atrato River, expedition to the, 17.
atratus, Cathartes, 238.
atricapilla, Calliste, 600.
  Calospiza, 600.
  Chlorophanes, 587.
  Tanagra, 600.
  Tangara, 600.
atricapillus, Buarremon, 578.
  Donacobius, 123, 530; range of, figured, 123.
  Orchilus, 444.
  Pachyrhamphus, 483.
  Turdus, 530.
atricaudus, Myiobius, 465.
  Myiobius barbatus, 465.
atrinucha, Thamnophilus, 366.
  Thamnophilus nævius, 367.

atrinucha, Thamnophilus punctatus, 366.
atripennis, Saltator, 562.
  Saltator atripennis, 562.
atripileus, Chlorospingus, 620.
atrocastaneus, Ostinops, 625.
atrocyaneus, Conirostrum, 583.
atronitens, Molothrus, 631.
  Molothrus bonariensis, 631.
atropileus, Arremon, 620.
  Hemispingus, 620.
atrosericeus, Planesticus, 533.
Atticora cyanoleuca, 505.
  fasciata, 504.
  tibialis, 504.
Attila brasiliensis parambæ, 495.
  citreopygus citreopygus, 495.
  fuscicauda, 495.
  parambæ, 495.
audax, Myiodynastes, 463.
Aulacorhamphus albivitta, 334.
  albivitta griseigularis, 335.
  hæmatopygius, 335.
  petax, 334.
  phæolæmus, 334.
Aulacorhynchus albivitta albivitta, **334**, 335.
  albivitta griseigularis, 335.
  albivitta phæolæmus, **334**, 335.
  hæmatopygius, 124, **335**.
aura, Cathartes, 238.
  Cathartes aura, 238.
  Vultur, 238.
aurantiacus, Manacus, 487.
aurantiicinctus, Capito, 326.
aurantiiventris, Mitrephanes, 472.
auratus, Bucco, 326.
  Capito auratus, 326.
  Icterus, 634.
aurea, Rupicola peruviana, 137, 215, **496**.
aureatus, Myiobius sulphureipygius, 465, **466**.
  Myiobius xanthopygus, 466.
aureliæ, Eriocnemis, 302.
  Trochilus, 302.
  Vestipedes aureliæ, 302.
aureocincta, Buthraupis, 604.
aureola, Dendroica petechia, 545.
aureus, Veniliornis oleaginus, 352.
auricapilla, Pipra, 479.
auricapillus, Icterus, 633.
auriceps, Pharomachrus, 313.
  Tangara florida, 593.
  Trogon, 313.
auricrissa, Dubusia, 608.
  Sporathraupis cyanocephala, 608.
  Tanagra, 608.
auriculata, Peristera, 206.
  Zenaida, 206.
aurifrons, Myospiza, 567.
  Tanagra, 567.
aurita, Conopophaga, 362.
  Spermophila, 557, 558.
  Sporophila aurita, 557.
auritus, Turdus, 362.
aurovirens, Bucco, 324.
  Capito, 324.
aurulenta, Calliste, 595.
  Calospiza, 594.
  Calospiza aurulenta, 595.
  Tanagra, 594.
  Tangara aurulenta, 594.
aurulentus, Rhynchocyclus flaviventris, 437.
australis, Ammodramus savannarum, 566.
  Curucujus massena, 318.
  Rhynchortyx cinctus, 201, 202.
Automolus assimilis, 408.
  cinnamomeigula, 411.
  dorsalis, 409.
  holostictus, 409.
  ignobilis, 409.
  infuscatus infuscatus, 410.
  melanorhynchus, 409.
  nigricauda nigricauda, 411.
  nigricauda saturatus, 410.
  ochrolæmus turdinus, 409.
  pallidigularis, 410.
  pallidigularis pallidigularis, 410.
autumnalis, Dendrocygna, 233.
  Plegadis, 175.
Auxiliary Collections, 6.
axillaris, Arremon, 573.
Aythya nationi, 22.
azaræ, Saltator, 563.
  Saltator cærulescens, 563.
  Synallaxis azaræ, 402.

baliolus, Odontophorus, 200.
Ball, David S., acknowledgement to, 11; work by, 6.
Bangs, Outram, acknowledgement to, 10; publications by, 18.
bangsi, Calospiza gyroloides, 597.
    Manacus manacus, 112, **486**.
    Tangara gyroloides, 597.
barbacoæ, Hylopezus dives, 398.
Barbacoas, explorations about, 49.
barbata, Muscicapa, 465.
barbatus, Myiobius, 465.
    Myiobius barbatus, 465.
Barbets, 324.
baroni, Eutoxeres, 285.
barrabandi, Eucinetus, 265.
Barranquilla, 8.
Barro Blanco, explorations about, 61.
barroti, Heliothryx, 310.
    Trochilus, 310.
Basileuterus auricapillus olivascens, 552.
    bivittatus chlorophrys, 552.
    cabanisi, 551.
    cinereicollis, 550.
    conspicillatus, 551.
    coronatus, 552.
    fulvicauda, 109.
    fulvicauda fulvicauda, 553.
    fulvicauda semicervinus, 553.
    luteoviridis, 550.
    melanotis dædalus, 551.
    nigrocristatus, 549.
    richardsoni, 550.
    rufifrons mesochrysus, 553.
    semicervinus, 553.
    tristriatus tristriatus, 551.
    uropygialis, 553.
    vermivorus olivascens, 552.
Batty, J. H., collections by, 69.
bellus, Masius chrysopterus, 484.
    Myiobius, 468.
    Myiobius pulcher, 468.
Belonopterus cayennensis, 222.
benjamini, Trochilus, 303.
    Urosticte benjamini, 303.
Berlepsch, Count von, on a Bucaramanga Collection, 15; publications by, 18.
berlepschi, Anthocephala, 295.
    Cercomacra, 381.
berlepschi, Columba, 140, 204, 205, **206**.
    Crypturus, 191.
    Cyanolesbia, 308.
    Henicorhina leucophrys, 525, 526.
    Myrmeciza, 384.
    Myrmeciza immaculatus, 384.
    Phimosus, 227.
    Pipra erythrocephala, 480.
    Pseudotriccus pelzelni, 441.
    Pyriglena, 381.
    Pyrrhura, 259.
    Simonula, 295.
    Thamnophilus, 368.
Bibliography, 657–659.
bicolor, Accipiter, 242.
    Anas, 233.
    Anoplops bicolor, 382.
    Dendrocygna, 233.
    Euetheia, 560.
    Heleodytes, 509.
    Heleodytes minor, 126, 131, **509**.
    Phonipara, 560.
    Pithys, 382.
    Sparvius, 242.
bidentatus, Falco, 250.
    Harpagus, 250.
    Ictinia, 250.
birchalli, Catharus, 538.
Birds Collected in Colombia by the American Museum's Expeditions, a Distributional List of, 170.
Birds, for millinery purposes, 4, 11, 12; forest-dwelling, 138; number collected, 5, 9; of the Paramo Zone, 167; of the Subtropical Zone, 141; of the Temperate Zone, 160; of the Tropical Zone, 96.
bistriatus, Burhinus, 226.
    Charadrius, 226.
Bitterns, 228.
blackburniæ, Dendrœca, 545.
    Dendroica, 545.
Blow-gun, use of, 13, 14.
Boatbills, 228.
Bogotá, collections from, 11; explorations in region of, 52, 50;
Bogotá Savanna, 53.
bogotensis, Agelaius icterocephalus, 161, 445, **632**.
    Anthus, 554.

bogotensis, Asio accipitrinus, 9.
  Asio flammeus, 164, 163, **252**.
  Chamæza, 391.
  Columba plumbea, 204.
  Columba subvinacea, 140, **204**, 205, 206.
  Eriocnemis mosquera, 302.
  Habrura pectoralis, 164, **445**.
  Ixobrychus exilis, 163, 164, **231**, 445.
  Porphyriops melanops, 161, 164, **219**.
  Presbys, 508.
  Tangara guttata, 594.
  Thryophilus, 512.
  Thryophilus albipectus, 512.
  Zenaida, 207.
Boissoneau, M., publications by, 11.
Boissonneaua flavescens flavescens, 140, **300**.
  jardini, 300.
boissonneauti, Anabates, 408.
  Pseudocolaptes boissonneauti, 408.
boliviana, Callospiza, 598.
  Tangara mexicana, 598.
  Trogonurus, 316.
bombus, Chætocercus, 312.
  Polyxemus, 312.
bonapartei, Helianthea, 297.
  Nothocercus, 190.
  Ornismya, 297.
  Tinamus, 190.
bonariensis, Molothrus bonariensis, 631.
Boucard, Adolphe, publications by, 17.
boucardi, Crypturus, 193.
  Myrmeciza, 385.
  Myrmeciza longipes, 126, 384.
Bourcier, Jules, publications by, 11.
Bourcieria torquata, 297.
bourcieri, Calliste, 591.
  Capito, 327.
  Chlorochrysa calliparæa, 591.
  Geotrygon, 146, 214.
  Oreopeleia, 214.
bourcierii, Micropogon, 327.
Bowman, Professor Isaiah, 10.
Boyle, Howarth S., work by, 9, 10, 58.
Brabourne, Lord, and Charles Chubb, publications by, 170, 180.
Brachygalba fulviventris **caquetæ, 338**.
  fulviventris fulviventris, 133, 338.
Brachygalba lugubris, 339.
brachyptera, Elænia, 456.
  Elænia pudica, 456.
brachypterus, Colymbus dominicus, 221.
  Donacobius, 530.
brachyrhynchus, Colymbus dominicus, 221.
Brachyspiza capensis, 52.
  capensis peruviana, 136, 139, **568**.
brachytarsus, Contopus, 474.
  Empidonax, 474.
  Myiochanes, 474.
brachyura, Buteola, 243.
brachyurus, Buteo, 243.
branickii, Odontorhynchus, 511.
brasilianum, Glaucidium brasilianum, 255.
brasilianus, Carbo, 236.
  Megascops, 253.
  Scops, 253.
brasiliensis, Gallinago, 225.
  Mimus, 531.
braziliensis, Scolopax, 225.
brevicarinatus, Ramphastos, 328.
  Ramphastos piscivorus, 328.
brevicauda, Chamæza, 391.
  Grallaria brevicauda, 397.
brevipennis, Habrura pectoralis, 445.
brevirostris, Campylorhynchus, 511.
  Cyclorhynchus, 434.
  Euphonia, 589.
  Galbula ruficauda, 336.
  Heleodytes, 126, 131.
  Heleodytes zonatus, 511.
  Hypoxanthus, 346.
  Hypoxanthus rivolii, 346.
  Tanagra xanthogastra, 488, 589.
brevis, Grallaricula flavirostris, 399, 400.
Brotogeris devillei, 261.
  jugularis, 124, 131, **261**.
Brotogerys tovi, 261.
Brown, W. W., collections by, 18, 19.
browni, Elænia, 457.
  Pseudochloris, 571, 572.
brunnea, Marila, 234.
  Nyroca, 234.
brunneicapillus, Microtriccus brunneicapillus, 452.
  Tyrannulus, 452.

brunneiceps, Henicorhina leucophrys, 527.
brunneifrons, Ochthœca œnanthoides, 428.
brunneinucha, Conopophaga castaneiceps, 363.
  Embernagra, 577.
brunneinuchus, Buarremon, 151, 152, **577**.
brunneitorques, Chætura, 278.
  Cypseloides brunneitorques, 278.
brunneiventris, Diglossa, 59, **580**.
brunnescens, Atlapetes gutturalis, 154.
  Cyphorhinus, 527.
  Margarornis, 416.
  Premnoplex brunnescens, 416.
brunneus, Sclerurus, 415.
Buarremon albifrenatus, 576.
  assimilis, 160, **577**.
  atricapillus, 578.
  brunneinuchus, 151, 152, **577**; distribution of, figured, 152.
  castaneiceps, 574.
  elæoprorus, 575.
  gutturalis, 575.
  latinuchus, 575.
  pallidinuchus, 576.
Bubonidæ, 252.
Bucaramanga, collections from, 15.
Bucco auratus, 326.
  aurovirens, 324.
  capensis, 339.
  fulvidus, 342.
  fuscus, 342.
  lanceolata, 344.
  leucocrissus, 340.
  nigrifrons, 345.
  noanamæ, 341.
  pectoralis, 340.
  radiatus, 341.
  ruficollis, 341.
  subtectus, 340.
  tectus subtectus, 340.
Bucconidæ, 339.
buckleyi, Tityra, 490.
Buenaventura, explorations about, 8, 17, 23.
Buena Vista, explorations about, 56.
buenavistæ, Chloronerpes rubiginosus, 348.
buffoni, Chalybura, 293.
  Chalybura buffoni, 293.
  Circus, 240.
  Falco, 240.
  Hypuroptila, 293.
  Trochilus, 293.
Buntings, 555.
Burhinus bistriatus, 226.
Busarellus nigricollis, 247.
Buteo brachyurus, 243.
  harrisi, 241.
  hypospodius, 242.
  latissimus, 243.
  pennsylvanicus, 243.
  platypterus, 243.
Buteogallus nigricollis, 247.
Buteola brachyura, 243.
Buthraupis aureocincta, 604.
  chloronota, 603.
  cucullata cucullata, 603.
  cucullata gigas, 603.
  edwardsi, 604.
  eximia chloronota, 603.
  eximia eximia, 604.
  melanochlamys, 604.
  rothschildi, 604.
Butorides cyanurus, 230.
  grisea, 230.
  striata, 230.

cabanidis, Petasophora, 294.
cabanisi, Basileuterus, 551.
  Ceryle, 266.
  Chloroceryle americana, 267.
  Empidochanes, 471.
  Empidonax, 471.
  Molothrus bonariensis, 631.
cabanisii, Lampropsar, 631.
  Molothrus (Lampropsar), 631.
cachabiensis, Thamnophilus, 381.
cachaviensis, Geotrygon veraguensis, 214.
cachinnans, Falco, 248.
  Herpetotheres, 248.
  Herpetotheres cachinnans, 248.
Cacicus cela, 627.
  hæmorrhous affinis, 628.
  leucorhamphus, 628.
  uropygialis, 628.
  uropygialis microrhynchus, 629.
  uropygialis pacificus, 629.

Cacicus uropygialis uropygialis, 140.
  vitellinus, 627.
  wagleri, 623.
Cænotriccus ruficeps, 441.
  ruficeps hapalopteryx, 442.
  ruficeps ruficeps, 442.
  simplex, 442.
cærulea, Ardea, 229.
  Cœreba, 586.
  Dendrœca, 545.
  Dendroica, 545.
  Florida, 164, **229**.
  Sylvia, 545.
cæruleocephala, Aglaia, 598.
  Tangara cyaneicollis, 598.
cæruleogaster, Chalybura, 293.
  Trochilus (Glaucis), 293.
cæruleoventris, Iridosornis dubusia, 60.
cærulescens, Chlorophanes, 587.
  Chlorophanes spiza, 587.
  Diglossa, 582.
  Diglossopis cærulescens, 582.
Caica melanocephala pallida, 265.
  pyrilia, 265.
caica, Eucinetus, 265.
  Psittacus, 265.
Cairina moschata, 233.
cajanea, Aramides cajanea, 217.
  Fulica, 217.
cajanus, Aramides, 217.
Caldas, explorations in, 23.
Cali, explorations about, 25.
caligatus, Chrysotrogon caligatus, 317
callinota, Formicivora, 378.
  Terenura, 378.
Calliphlox mitchelli, 311.
calliptera, Pyrrhura, 259.
callipterus, Conurus, 259.
Callispiza vitriolina, 595.
Calliste atricapilla, 600.
  aurulenta, 595.
  bourcieri, 591.
  cæruleocephala granadensis, 599.
  emiliæ, 596.
  francescæ, 598.
  guttata, 594.
  gyroloides, 596.
  icterocephala, 595.
  inornata, 598.
Calliste johannæ, 593.
  labradorides, 600.
  larvata, 598.
  lavinia, 596.
  melanotis, 600.
  nigroviridis, 598.
  phœnicotis, 592.
  ruficapilla, 596.
  ruficervix, 299.
  venusta, 600.
  vitriolina, 595.
  xanthogastra, 594.
Callospiza boliviana, 598.
Calochætes coccineus, 613.
Calospiza atricapilla, 600.
  aurulenta, 594.
  aurulenta aurulenta, 595.
  cyaneicollis granadensis, 599.
  gyroloides, 596.
  gyroloides bangsi, 597.
  gyroloides catharinæ, 597.
  gyroloides deleticia, 596.
  gyroloides gyroloides, 596.
  icterocephala, 595.
  johannæ, 593.
  labradorides, 600.
  larvata fanny, 598.
  lavinia lavinia, 596.
  palmeri, 597.
  ruficervix ruficervix, 599.
  rufigula, 594.
Campephilus hæmatogaster, 355.
  malherbii, 355.
  melanoleucus, 355.
  pollens, 355.
  rubricollis, 354.
  trachelopyrus, 354.
Campophilus splendens, 355.
Camptostoma caucæ, 452.
  pusillum napæum, 452.
  pusillum pusillum, 452.
Campylopterus æquatorialis, 285.
  falcatus, 285.
  obscurus æquatorialis, 285.
Campylorhamphus chapmani, 425.
  pucherani, 426.
  pusillus, **425**, 426.
  thoracicus, 424.
  trochilirostris procurvoides, 424.

Campylorhamphus trochilirostris venezuelensis, 424.
Campylorhynchus brevirostris, 511.
  hypostictus, 510.
  nuchalis, 511.
  zonatoides, 511.
cana, Serpophaga cinerea, 447.
  Tanagra, 58, 607.
  Thraupis cana, 122, 131, **607**.
canadensis, Muscicapa, 548.
  Wilsonia, 548.
Cancroma cochlearia, 230.
candæi, Synallaxis, 405.
  Synallaxis candæi, 405.
candei, Synallaxis, 131.
candidissima, Ardea, 229.
  Egretta, 164, **229**.
  Garzetta, 229.
canens, Arremonops conirostris, 569.
caneus, Arremonops, 569.
caniceps, Saltator atripennis, 562.
canigularis, Chlorospingus, 619.
  Tachyphonus, 619.
canipileus, Chloronerpes rubiginosus, 348.
canticus, Cyclarhis flavipectus, 541.
canus, Picumnus, 358.
  Scytalopus, 359.
capensis, Brachyspiza, 52.
  Bucco, 339.
capitalis, Dysithamnus, 372.
  Dysithamnus capitalis, 372.
Capito aurantiicinctus, 326.
  auratus auratus, 326.
  auratus intermedius, 326.
  aurovirens, 324.
  bourcieri, 327.
  bourcieri salvini, 327.
  hypoleucus, 119, **326**.
  maculicoronatus, 16, 324; range of races of, figured, 114.
  maculicoronatus maculicoronatus, 114, 324, 325.
  maculicoronatus pirrensis, 114, **324**, 325.
  maculicoronatus rubrilateralis, 114, **324**, 325.
  quinticolor, 326.
  ruficollis, 341.
  salvini, 327.
Capito squamatus, 114, **325**; range of figured, 114.
Capitonidæ, 324.
Caprimulgidæ, 272.
Caprimulgus acutipennis, 272.
  albicollis, 274.
  cayennensis, 274.
  leopetes, 275.
  longicaudatus, 272.
  rosenbergi, 275.
Capsiempis flaveola leucophrys, 450.
  leucophrys, 450.
Caqueta, Amazonian forests of the region of, 9; explorations, 47.
caquetæ, Brachygalba fulviventris, **338**.
  Crypturus soui, 191, **193**.
caquetensis, Synallaxis rutilans, 406.
Caracaras, 238.
Carbo brasilianus, 236.
  vigua, 236.
carbo, Lanius, 609.
  Ramphocelus carbo, 609.
Carduelis columbianus, 564.
caribæus, Ammodramus savannarum, 566.
Caribbæan Fauna, The, 130.
carolina, Porzana, 218.
carolinus, Rallus, 218.
Carpodectes hopkei, 499.
Carriker, M. A., Jr., work by, 7.
carrikeri, Formicarius rufipectus, 146, 147, **390**.
Cartago, explorations in, 26; to San Juan River, 32.
caruncullata, Aburria, 197.
Cassicus affinis, 628.
  angustifrons, 627.
  flavicrissus, 627.
  guatimozinus, 623.
  icteronotus, 627.
  leucorhamphus, 628.
  persicus, 627.
  pyrohypogaster, 635.
  solitarius, 629.
  uropygialis, 628, 629.
  vitellinus, 627.
  yuracares, 624.
Cassidix oryzivora, 630.
  oryzivora violea, 630.

Cassin, John, publications by, **17**.
cassini, Eucometis, 617.
  Leptotila, 213.
  Mitrospingus, 617.
  Molothrus, 631.
  Myrmeciza maculifer, 383.
  Myrmelastes, 383.
cassinii, Tachyphonus, 617.
castanea, Dendrœca, 546.
  Dendroica, 546.
  Sylvia, 546.
castaneiceps, Anurolimnas, 217.
  Buarremon, 574.
  Conopophaga, 362.
  Conopophaga castaneiceps, **362**, 363.
  Lysurus, 574.
  Porzana, 217.
  Tinamus, 189.
  Tinamus major, 188, **189**.
castaneiventris, Sporophila, 557.
castaneotincta, Lathria unirufa, 494.
castaneus, Pachyrhamphus, 491.
castanotis, Pteroglossus, 332.
  Pteroglossus castanotis, 332.
castanotus, Thryophilus rufalbus, 512.
castelnaudi, Glyphorhynchus, 417.
  Glyphorhynchus cuneatus, 417.
  Onychorhynchus, 464.
  Onychorhynchus coronatus, 464.
Catamblyrhynchidæ, 554.
Catamblyrhynchus diadema, 554.
Catamenia analis anloides, 161.
  analis schistaceifrons, 161.
  analoides analoides, 560.
  analoides schistaceifrons, 560.
  homochroa, 560.
  homochroa homochroa, 559.
  homochroa minor, 559.
  inornata minor, 559.
catharinæ, Calospiza gyroloides, 597.
  Tangara gyroloides, 597.
Catharista atrata, 238.
  urubu, 238.
Cathartes atratus, 238.
  aura, 238.
  aura aura, 238.
Cathartidæ, 237.
Cathartiformes, 237.
Catharus birchalli, 538.
Catharus dryas, 538.
  maculatus, 539.
  phæopleurus, 538.
Cauca-Magdalena Fauna, species which characterize the, 127; species which enter from the east, 128; species which enter from the west, 128.
Cauca River, the, 25, 26.
Cauca Valley, explorations in the, 25, 32; list of species and subspecies known only from the, 129.
caucæ, Ammodramus savannarum, 566.
  Camptostoma, 452.
  Cerchneis sparveria, 251.
  Cerchneis sparverius, 251.
  Chæmepelia rufipennis, 209.
  Cœreba mexicana, 579.
  Crypturus soui, 191.
  Cyanocompsa cyanea, 555.
  Ortalis columbiana, 196.
  Phyllomyias griseiceps, 451.
  Piaya cayana, 320.
  Planesticus, 533.
  Psittacula conspicillata, 260.
  Synallaxis pudica, 404.
  Vireosylva chivi, 539.
caucensis, Eriocnemis aureliæ, 302.
  Pitangus sulphuratus, 462.
  Vestipedes aureliæ, 302.
caudacutus, Sclerurus, 415.
caudata, Cyanolesbia, 308, 309.
  Drymophila caudata, 378.
  Formicivora, 378.
caudatus, Scolopax, 227.
  Theristicus, 227.
caurensis, Gymnostinops yuracares, 624.
cayana, Dacnis cayana, 583.
  Lanius, 488.
  Motacilla, 583.
  Piaya, 319.
  Tityra, 488.
cayenensis, Leptodon, 250.
  Muscicapa, 460.
  Myiozetetes cayenensis, 460.
cayennensis, Aramides, 217.
  Belonopterus, 222.
  Caprimulgus, 274.
  Elænia, 460.
  Harpiprion, 227.

cayennensis, Myiozetetes, 460.
  Myiozetetes cayennensis, 460.
  Parra, 222.
  Stenopsis cayennensis, 274.
  Tantalus, 227.
  Thermochalcis cayennensis, 274.
  Vanellus, 222.
ceciliæ, Chloronerpes, 353.
cecilii, Mesopicus, 353.
  Veniliornis kirki, 353.
cela, Cacicus, 627.
  Oriolus, 627.
Celeus loricatus, 353.
  loricatus fraseri, 354.
  loricatus loricatus, 353.
  loricatus mentalis, 354.
  mentalis, 354.
  squamatus, 354.
Central American Extension of the Subtropical Zone and the Panama 'Fault,' 151.
Central Andes, Exploration in the, 25.
Centurus rubricapillus, 351.
Ceophlœus lineatus lineatus, 356.
  lineatus mesorhynchus, 356.
  mesorhynchus, 456.
Cephalopterus ornatus, 501.
  penduliger, 501.
cephalotes, Myiarchus, 476.
Cerchneis sparveria, 252.
  sparveria caucæ, 251.
  sparveria intermedia, 251.
  sparveria sparveria, 251.
  sparveria caucæ, 251.
  sparverius ochracea, 251.
Cercomacra berlepschi, 381.
  nigricans, 381.
  sclateri, 380.
  tyrannina rufiventris, 380.
  tyrannina tyrannina, 380.
Cerro Munchique, explorations in, 31.
Certhiola columbiana, 578.
  intermedia, 578.
  luteola, 578.
  mexicana, 578.
cervina, Adelomyia, 304.
  Adelomyia melanogenys, 304.
cervinicauda, Threnetes, 279.
Ceryle amazona, 266.
Ceryle amazonia, 266.
  americana, 266.
  americana americana, 266.
  cabanisi, 266.
  inda, 267.
  torquata torquata, 266.
Chachalacas, 194.
Chæmepelia minuta elæodes, 209.
  passerina albivitta, 208.
  passerina nana, 209.
  passerina parvula, 208.
  rufipennis caucæ, 209.
  rufipennis rufipennis, 209.
Chætocercus bombus, 312.
  heliodor, 312.
  mulsanti, 311.
Chætura brunneitorques, 278.
  cinereiventris occidentalis, 277, **278**.
  cinereiventris sclateri, 277.
  sclateri, 277.
  sclateri occidentalis, 278.
  spinicauda fumosa, 277.
chalcocephala, Galbula albirostris, 337.
chalcopterus, Pionus, 264.
  Psittacus, 264.
Chalcostigma herrani, 306.
  heteropogon, 306.
chalybea, Hirundo, 502.
  Progne, 502.
  Progne chalybea, 502.
chalybeia, Progne, 502.
Chalybura buffoni, 293.
  buffoni buffoni, 293.
  cæruleogaster, 293.
  urochrysa, **293**, 294.
Chamæpelia albivitta, 208.
  granatina, 208.
  passerina, 208.
  rufipennis, 209.
Chamæpetes goudoti, 197.
  goudoti goudoti 197.
Chamæza bogotensis, 391.
  brevicauda columbiana, 391.
  brevicauda (nobilis?), 391.
  columbiana, 391.
  mollissima, 392.
  nobilis, 391.
  turdina, 391.
chapmani, Campylorhamphus, 425.

Charadriidæ, 222.
Charadriiformes, 222.
Charadrius bistriatus, 226.
    dominicus, 222.
    dominicus dominicus, 222.
    mexicanus, 223.
    semipalmatus, 223.
    virginicus, 222.
Chatterers, 488.
Chauna chavaria, 232.
chavaria, Chauna, 232.
    Parra, 232.
Chelidoptera tenebrosa, 12.
cheriway, Falco,
    Polyborus, 238.
Cherrie, George K., work by, 9, 10, 50.
cherriei, Myospiza, 567.
Chicoral, explorations in, 32, 36.
chilensis, Aglaia, 593.
    Tanagra, 123.
    Tangara, 593.
chimachima, Milvago, 239.
    Polyborus, 239.
chionurus, Trogon, 317.
    Trogon strigilatus, 317.
chiriquensis, Elænia chiriquensis, 455.
    Elainia, 455.
Chiromachæris manacus, 485.
    vitellinus, 487.
Chiroxiphia pareola napensis, 484.
chivi, Vireo chivi, 539.
Chlorestes hæberlini, 290.
Chloroceryle amazona, 266.
    americana americana, 266.
    americana cabanisi, 267.
    americana isthmica, 266.
    inda, 267.
Chlorochrysa calliparæa bourcieri, 491.
    nitidissima, 146, **592**.
    phœnicotis, 592.
Chlorœnas rufina, 201.
Chloronerpes ceciliæ, 353.
    dignus, 352.
    gularis, 347.
    leucolæmus, 347.
    litæ, 347.
    rubiginosus, 347.
    rubiginosus alleni, 348.
    rubiginosus buenavistæ, 348.
Chloronerpes rubiginosus canipileus, 348.
    rubiginosus gularis, 347.
    rubiginosus meridensis, 348.
    rubiginosus rubripileus, 348.
    xanthochlorus, 347.
chloronota, Buthraupis, 603.
    Buthraupis eximia, 603.
Chlorophanes atricapilla, 587.
    cærulescens, 587.
    spiza cærulescens, 587.
    spiza exsul, 586.
    spiza guatemalensis, 586.
Chlorophonia pretrei, 587.
    pretrii, 587.
chlorophrys, Basileuterus bivittatus, 552.
Chloropipo flavicapilla, 483.
    holochlora, 483.
    holochlora holochlora, 483.
    holochlora litæ, 483.
chloropoda, Phaëtusa, 221.
    Sterna, 221.
chloroptera, Ara, 256.
chloropterus, Ara, 256.
Chlorospingus albitempora nigriceps, 618.
    albitempora venezuelanus, 618.
    albitemporalis, 618.
    atripileus, 620.
    canigularis, 619.
    flavigularis flavigularis, 619.
    flavigularis hypophæus, 619.
    flavigularis marginatus, 619.
    flavipectus, 618.
    melanotis, 621.
    nigrifrons, 621.
    oleagineus, 621.
    rubrirostris, 620.
    semifuscus, 620.
Chlorostilbon angustipennis, 290.
    comptus, 290.
    gibsoni, 290.
    hæberlini, 290.
    melanorhynchus, 290.
    poortmani poortmani, 291.
    pumilus, 290, 291.
Chlorothraupis olivacea, 614.
    stolzmani, 614.
chocoensis, Conopophaga castaneiceps, 363.
    Euphonia xanthogaster, 588.

chocoensis, Euphonia xanthogastra, 588, 589.
  Grallaria guatimalensis, **394**.
  Tanagra xanthogastra, **588**, 589.
choliba, Otus, 253.
  Strix, 253.
Chordeiles acutipennis acutipennis, 272.
  acutipennis texensis, 273.
  texensis, 273.
  virginianus, 273.
chrysocephalus, Myiodynastes, 464.
chrysolampis moschitus, 295.
  elatus, 295.
chrysoma, Arremonops conirostris, 113, 569, **570**.
  Embernagra, 570.
Chrysomitris columbiana, 564.
  spinescens, 563.
  xanthogastra, 564.
chrysonotus, Ramphocelus, 187, **610**.
chrysopasta, Euphonia, 591.
  Tanagra, 591.
chrysops, Myioborus, 29, **549**.
  Setophaga, 549.
  Tyranniscus chrysops, 454.
  Tyrannulus, 454.
chrysoptera, Helminthophaga, 543.
  Helminthophila, 543.
  Motacilla, 543.
  Pipra, 483.
  Vermivora, 543.
chrysopterus, Masius, 483.
Chrysoptilus guttatus, 349.
  punctigula, 350.
  punctigula guttatus, 348.
  punctigula punctipectus, **349**, 350.
  punctigula striatigularis, 350.
  punctigula ujhelyii, **349**, 350.
  ujhelyii, 349.
Chrysotis inornata, 262.
  mercenaria, 262.
  panamensis, 263.
Chrysotrogon caligatus caligatus, 317.
  caligatus columbianus, 317.
  ramonianus, 317.
  violaceus, 317.
Chubb, Charles, see Brabourne, Lord, 170, 180.
Ciccaba albitarsus, 254.
Ciccaba albogularis, 254.
  nigrolineata, 254.
  virgata, 254.
  virgata virgata, 254.
Ciconia mycteria, 228.
Ciconiidæ, 228.
cinchoneti, Conopias, 462.
  Tyrannus, 462.
Cinclidæ, 529.
Cinclus leuconotus, 29, **529**.
cinctus, Ampelion, 498.
  Ampelis, 498.
  Cyphorhinus, 385.
  Dichrozona, 385.
  Stictornis, 498.
cineracea, Sayornis, 472.
  Sayornis nigricans, 472.
  Tyrannula, 472.
cinerascens, Rhynchops, 222.
  Rhynchops nigra, 222.
cinerea, Ampelis, 494.
  Lathria, 494.
  Peristera, 210.
  Serpophaga, 447.
cinereiceps, Tyranniscus, 454.
  Tyrannulus, 454.
cinereicollis, Basileuterus, 550.
  Scytalopus, 359.
cinereiventris, Microbates cinereiventris, 379.
  Pachyrhamphus, 493.
  Ramphocænus, 379.
  Ramphocænus cinereiventris, 379.
cinereum, Todirostrum, 437.
  Todirostrum cinereum, 437.
  Todus, 437.
cinereus, Circus, 240.
  Crypturus, 191.
  Tetrao cinereus, 191.
cinnamomea, Leptoxura, 405.
  Muscipeta, 467.
  Synallaxis, 405.
cinnamomeigula, Automolus, 411.
cinnamomeiventris, Muscicapa, 429.
  Ochthœca, 429.
cinnamomeus, Myiobius, 467.
  Pachyrhamphus, 591.
  Picumnus, 131, **356**.
Cinnicerthia olivascens, 508.

Cinnicerthia olivascens infasciata, 508.
  unibrunnea, 17, **508**.
  unirufa, 508.
Circus buffoni, 240.
  cinereus, 240.
  hudsonicus, 239.
  hudsonius, 239.
Cirrhipipra filicauda, 482.
Cissopis leveriana minor, 622.
  minor, 622.
Cistothorus æquatorialis, 55, 418, **517**.
  apolinari, 9, 445, **518**.
  meridæ, 518.
citrea, Motacilla, 543.
  Protonotaria, 543.
citreolæmus, Ramphastos, 330.
citreopyga, Dasycephala, 495.
citreopygus, Attila citreopygus, 495.
citrina, Pseudochloris citrina, 571.
citrinifrons, Ochthœca, 428.
clara, Lathria unirufa, 494.
Claravia pretiosa, 210.
  pretiosa livida, 210.
Classification, System of, 170.
climacocerca, Hydropsalis, 274.
climacocercus, Hydropsalis, 274.
Climatology, notes on Colombian, 79.
Clytoctantes alixii, 369.
cnephosa, Planesticus tristis, 534.
Cniparchus hæmatogaster splendens, 355.
Cnipodectes minor, 465.
Cocal, explorations in, 31.
coccineicollaris, Eucinetus, 265.
coccineus, Calochætes, 613.
  Euchætes, 613.
Coccyges, 319.
Coccyzus americanus, 319.
  americanus americanus, 319.
  melacoryphus, 319.
Coccyzusa gracilis, 322.
cochlearia, Cancroma, 230.
Cochlearius cochlearius, 230.
cochlearius, Cochlearius, 230.
Cock-of-the-Rock, 137.
cocoi, Ardea, 228.
cœlestis, Cyanolesbia, 307, 308, **309**.
  Cyanthus, 309.
  Thraupis cœlestis, 607.
cœligena, Lampropygia, 298.
cœlina, Lepidopyga, 287.
  Thalurania, 287.
Cœreba cærulea, 586.
  cærulea microrhyncha, 586.
  chloropyga mexicana, 578.
  gorgonæ, 18.
  luteola luteola, 578.
  mexicana caucæ, 579.
  mexicana columbiana, **578**, 579.
cœrebicolor, Dacnis, 584.
  Dacnis cayana, 584.
Cœrebidæ, 578.
Colibri cyanotus, 294.
  delphinæ, 294.
  iolata, 295.
Colinus cristata leucotis, 122.
  cristatus, 131.
  cristatus decoratus, 198.
  cristatus leucotis, 174, **199**.
  cristatus littoralis, 198.
  cristatus parvicristatus, 199.
  cristatus sonnini, 199.
  nigrogularis, 174.
  virginianus, 173, 174.
collaris, Ægialitis, 223.
  Microbates, 380.
  Ramphocænus, 380.
  Trogon, 315.
  Trogonurus, 315.
Collecting Stations, description of routes and, 22, 30, 33, 40, 46, 49, 60; Gazeteer of Colombian, 640–656.
Collections, auxiliary, 6, 68; by Hermano Apolinar Maria, 69; by J. H. Batty, 69; by Manuel Gonzales, 69; by Mrs. Elizabeth L. Kerr, 69; of the American Museum of Natural History, 6; from Antioquia; from the Lower Atrato River; from Bogotá; from Bucaramanga, 15; from Buenaventura, 17; from the Caquetá, 9; from Ecuador, 6; from Gorgona Island, 18; from Laguneta 28; from the Nercua River, 17; from Panamá, 6; from San Juan, 18; from Santa Marta, 6, 18; from the Truando River, 17; from western Colombia, 17.
Colombia, the American Museum Expeditions in, 20.

Colombian Government, acknowledgement to, 8.
Colombian Ornithology, a review of, 11.
Colombian-Pacific Fauna, list of species which characterize the, 115.
colombiana, Homophania cœligena, 298.
    Merganetta, 236.
colombianus, Myiozetetes texensis, 460.
    Neocrex, 219.
    Planesticus obsoletus, 536.
    Theristicus, 227.
    Turdus, 536.
colombica, Ornismya, 293.
    Thalurania colombica, 293.
    Thalurania colombica, 293.
Colopterus pilaris, 444.
coloratus, Premnoplex brunnescens, 417.
Color Terms, 186.
Columba albilinea albilinea, 203.
    albilineata, 203.
    goodsoni, 203.
    linearis, 215.
    montana, 213.
    plumbea, 203.
    plumbea propinqua, 203.
    rufina, 26, **202**.
    speciosa, 202.
    subvinacea, 204.
    subvinacea berlepeschi, 140, 204, 205, **206**.
    subvinacea bogotensis, 140, **204**, 205, 206.
    subvinacea peninsularis, 205.
    subvinacea zuliæ, 205.
columbæ, Troglodytes, 518, 520, 521.
    Troglodytes musculus, 161, **520**, 521.
columbiana, Certhiola, 578.
    Chamæza, 391.
    Chamæza brevicauda, 391.
    Chrysomitris, 564.
    Cœreba mexicana, **578**, 579.
    Fulica americana, 163, 164, **220**.
    Glaucis, 280.
    Helianthea cœligena, 298.
    Lampropygia, 298.
    Merganetta, 29.
    Muscisaxicola, 167.
    Muscisaxicola alpina, 432.
    Myospiza manimbe, 567.
columbiana, Ortalis columbiana, 122, **196**.
    Piaya cayana, **319**, 321.
    Sicalis, 565.
    Sycalis, 565.
    Tityra semifasciata, 489.
    Upucerthia excelsior, 167, 433.
columbianus, Astragalinus psaltria, 564.
    Carduelis, 564.
    Chrysotrogon caligatus, 317.
    Knipolegus, 471.
    Mimus, 530.
    Mimus gilvus, 530.
    Myiozetetes, 460.
    Myiozetetes similis, 460.
    Neocrex, 219.
    Phœthornis, 282.
    Phœthornis syrmatophorus, 282.
    Pyrrhococcyx, 319.
    Synallaxis gujanensis, 405.
    Upucerthia excelsior, 401.
    Xenicopsis subalaris, 413.
Columbidæ, 201.
Columbiformes, 202.
Columbigallina passerina, 208.
    passerina granatina, 208.
    rufipennis, 209.
Colymbus dominicus brachypterus, 221.
    dominicus brachyrhynchus, 221.
    fulica, 220.
    podiceps, 221.
Compsocoma cyanoptera, 605.
    notabilis, 606.
    somptuosa, 605.
    somptuosa antioquiæ, 605.
    somptuosa cyanoptera, 605.
    somptuosa victorini, 605.
Compsothlypis pitiayumi elegans, 544.
    pitiayumi pacifica, 544.
comptus, Chlorostilbon, 290.
concinna, Euphonia, 589.
    Tanagra, 589.
condaminii, Eutoxeres, 284.
    Trochilus, 284.
Condors, 4, 237.
conexus, Momotus, 271.
    Momotus subrufescens, 271.
conirostris, Arremon, 269.
    Arremonops, 126, 620.

conirostris, Arremonops conirostris, 113, 122, **569**, 570.
Conirostrum albifrons, 583.
  atrocyaneum, 583.
  fraseri, 163, **583**.
  rufum, 583.
  sitticolor, 583.
connectens, Formicarius analis, **389**, 390.
  Thryophilus nigricapillus, 140, **514**.
connivens, Myiozetetes, 461.
  Myiozetetes similis, 461.
Conopias cinchoneti, 462.
Conopophaga aurita, 362.
  castaneiceps, 362.
  castaneiceps brunneinucha, 363.
  castaneiceps castaneíceps, 122, **362**, 363.
  castaneiceps chocoensis, 363.
  cucullata, 400.
  nævioides, 387.
  theresæ, 387.
Conopophagidæ, 362.
consobrina, Formicivora, 378.
  Formivicora quixensis, 378.
  Microrhopias boucardi, 378.
  Phylidor, 411.
  Philydor rufipileatus, 411.
conspicillata, Psittacula, 260.
  Psittacula conspicillata, 122, **260**.
conspicillatus, Basileuterus, 551.
Contopus ardesiacus, 473.
  brachytarsus, 474.
  virens, 473.
Conurus æruginosus, 257.
  callipterus, 259.
  icterotis, 258.
  tovi, 261.
  wagleri, 257.
conversi, Popelairia, 312.
  Trochilus, 312.
Coots, 216.
Copurus colonus fuscicapillus, 432.
  fuscicapillus, 432.
  leuconotus, 432.
Coraciiformes, 266.
coracina, Pipra, 481.
  Pipra leucocilla, 481.
Corapipo altera altera, 485.
  leucorrhoa, 484.
Corapipo leucorrhoa altera, 485.
corassus, Microcerculus squamulatus, 528.
Corethrura albigularis, 218.
  guatemalensis, 217.
Cormorants, 236.
cornuta, Palamedea, 232.
coronata, Pipra, 482.
coronatus, Basileuterus, 552.
  Myiodioctes, 552.
  Placostomus, 433.
  Platyrhynchus, 433.
corunulatus, Masius, 484.
Corvidæ, 636.
Cory, Charles B., acknowledgement to, 10.
costaricensis, Grallaricula, 399.
  Tityra semifasciata, 489.
Cotinga nattereri, 12, **499**.
  simoni, 499.
Cotingas, 488.
Cotingidæ, 488.
Cotyle flavigastra, 505, 506.
  uropygialis, 506.
Cracidæ, 194.
Craspedoprion æquinoctialis, **433**, 434.
  fulvipectus, 434.
  pacificus, 434.
crassirostris, Euphonia, 591.
  Loxia, 556.
  Oryzoborus crassirostris, 556.
  Tanagra crassirostris, 591.
crassus, Atlapetes, 577.
Crax alberti, 194.
  alector, 194.
  cumanensis, 197.
  panamensis, 194.
Creciscus ænops, 218.
  albigularis, 218.
Creurgops verticalis, 616.
crinitus, Myiarchus, 474.
  Turdus, 474.
cristata, Eucometis, 617.
  Eucometis cristata, 617.
cristata, Meleagris, 195.
  Penelope, 161, **195**.
  Pipilopsis, 617.
cristatus, Colinus, 131.
  Eupsychortyx, 173.

cristatus, Ostinops, 624.
Crotophaga ani, 323.
  major, 323.
Crows, 636.
cruentata, Querula, 500.
cruentatus, Melanerpes, 350.
  Picus, 350.
Crypticus platyrhynchus, 268.
cryptolopha, Lathria, 494.
cryptorhis, Diglossa, 582.
Crypturus adspersus yapura, 193.
  berlepschi, 191.
  boucardi, 193.
  cinereus, 191.
  kerriæ, 193.
  modestus, 192.
  pileatus, 191.
  soui andrei, 191.
  soui caquetæ, 191, **193**.
  soui caucæ, 191.
  soui harterti, 192.
  soui modestus, 191, **192**.
  soui mustelinus, 193.
  soui panamensis, 192.
  soui soui, **191**, 193.
  variegatus salvini, 193.
Cuckoos, 319.
Cuculidæ, 319.
cucullata, Buthraupis cucullata, 603.
  Conopophaga, 400.
  Grallaricula, 400.
  Tanagra, 603.
Cuculus americanus, 319.
  nævius, 323.
  rutilus, 322.
culminatus, Ramphastos, 330.
cumanensis, Crax, 197.
  Pipile, 197.
  Thryophilus rufalbus, 512.
  Troglodytes, 512.
cupreicauda, Trogonurus curucui, 315.
cupreipennis, Aglæactis, 299.
cupripennis, Aglæactis cupripennis, 299.
  Trochilus, 299.
Curassows, 194.
curucui, Trogonurus curucui, 315.
Curucujus massena australis, 318.
  melanurus, 113.
  melanurus macrourus, 318.
Curucujus melanurus melanurus, 318.
cuvieri, Ramphastos, 330.
cyanea Cyanocompsa cyanea, 555.
cyaneocapilla, Pipra, 481.
Cyanerpes cærulea microrhyncha, 586.
  cyaneus cyaneus, 585.
  cyaneus gigas, 586.
  cyaneus pacificus, 585.
  gigas, 18.
cyanescens, Cyanocompsa concreta, 555.
cyaneus, Cyanerpes cyaneus, 585.
cyanocephala, Pipra, 588.
  Tanagra, 608.
  Tanagra cyanocephala, 588.
Cyanocitta armillata, 639.
  armillata quindiuna, 639.
Cyanocompsa concreta cyanescens, 555.
  cyanea caucæ, 555.
  cyanea cyanea, 555.
Cyanocorax affinis, 126, 636.
  affinis affinis, 636.
  affinis zeledoni, 636.
  armillatus, 639.
  pileatus, 636.
  sclateri, 636.
  violaceus, 637.
  yncas, 637.
cyanodorsalis, Xanthoura, 56, 638.
  Xanthoura yncas, 136, 150, 637, **638**.
cyanoides, Guiraca, 555.
Cyanolesbia berlepschi, 308.
  caudata, 308, 309.
  cœlestis, 307, 308, **309**.
  emmæ, 307, 308, **309**.
  kingi, 309.
  kingi kingi, **307**, 308.
  kingi margarethæ, 307, 308.
  mocoa mocoa, 307, 308, **309**.
  mocoa smaragdina, 308.
cyanoleuca, Atticora, 505.
  Hirundo, 505.
  Pygochelidon, 505.
Cyanolyca armillata armillata, 639.
  armillata quindiuna, 639.
  quindiuna, 638.
Cyanophaia goudoti, 287.
cyanoptera, Anas, 234.
  Compsocoma, 605.
  Compsocoma somptuosa, 605.

cyanoptera, Psittacula, 261.
  Querquedula, 234.
cyanotis, Petasophora, 294.
cyanotus, Colibri, 294.
  Trochilus, 194.
Cyclarhis flavipectus canticus, 541.
  flavipectus flavipectus, 541, 542.
  flavipectus **parvus**, **541**.
  nigrirostris, 542.
Cyclorhynchus æquinoctialis, 433.
  brevirostris, 434.
  fulvipectus, 434.
Cymbilaimus lineatus fasciatus, 109, **363**.
  lineatus lineatus, 363.
Cymbilanius lineatus, 363.
  lineatus fasciatus, 363.
Cymindis uncinatus, 250.
Cynanthus cœlestis, 309, 660.
  cyanurus, 307, 660.
  mocoa, 309, 660.
cyanurus, Butorides, 230.
  Cynanthus, 307.
Cyphorhinus brunnescens, 527.
  cinctus, 385.
  dichrous, 528.
  leucostictus, 522.
  phæocephalus, 16, 527.
  salvini, 527.
Cyppos macrodactylus, 341.
Cypselidæ, 276.
Cypseloides brunneitorques brunnetorques, 278.

Dabeiba, explorations about, 59, 67.
Dacnis angelica, 584.
  cayana cayana, 583.
  cayana cœrebicolor, 584.
  cayana napæa, 584.
  cœrebicolor, 584.
  egregia egregia, 585.
  leucogenys, 585.
  salmoni, 617.
  venusta, 585.
  venusta fuliginata, 585.
dædalus, Basileuterus melanotis, 551.
daguæ, Anoplops bicolor, 382.
  Gymnopithys bicolor, 382.
  Planesticus tristis, 534.
  Polioptila livida, 507.
daguæ, Turdus, 534.
  Turdus tristis, 534.
Dalmas, Le Comte de, see Simon, E.
Damophila juliæ juliæ, 290.
Darters, 237.
Dasycephala citreopyga, 495.
debilis, Planesticus ignobilis, 535.
decoratus, Colinus cristatus, 198.
  Eupsychortyx, 198.
decumanus, Ostinops, 25 26, 106, 120, 280, **624**; range of, figured, 120.
  Xanthornus, 624.
delatrii, Tachyphonus, 616.
Delattre, A., in western Colombia, 17.
delattrei, Tachyphonus, 616.
delatrii, Tachyphonus, 616.
deleticia, Calospiza gyroloides, 596.
delicata, Gallinago, 224.
  Scolopax, 224.
deliciosa, Pipra, 482.
deliciosus, Allocotopterus, 482.
delphinæ, Colibri, 294.
  Ornismya, 294.
  Petasophora, 294.
Dendrobates fidelis, 353.
Dendrocincla lafresnayei, 418.
  lafresnayei lafresnayei, 418.
  lafresnayei phæochroa, 419.
  meruloides lafresnayei, 418.
  olivacea lafresnayi, 418.
  tyrannina, 418.
  tyrannina tyrannina, 418.
Dendrocinda phæochroa, 419.
Dendrocolaptes albo-lineatus, 423.
  lacrymiger, 423.
  picirostris, 422.
  promeropirhynchus, 422.
  radiolatus, 427.
  sanctithomæ, 426.
  sancti-thomæ hesperius, 427.
Dendrocolaptes sancti-thomæ radiolatus, 427.
  sancti-thomæ sancti-thomæ, 426.
  triangularis, 420.
  validus, 426.
  validus validus, 426.
Dendrocolaptidæ, 400.
Dendrocops sancti-thomæ, 426.
  tyranninus, 418.

Dendrocygna autumnalis, 233.
  bicolor, 233.
  discolor, 233.
Dendrœca æstiva, 545.
  blackburniæ, 545.
  cærulea, 546.
  castanea, 546.
Dendroica æstiva, 545.
  æstiva æstiva, 545.
  blackburniæ, 545.
  cærulea, 545.
  castanea, 545.
  fusca, 545.
  petechia æquatorialis, 545.
  petechia aureola, 545.
  striata, 546.
Dendroplex picirostris, 422.
  picus picirostris, 422.
  picus picus, 422.
Dendrornis insignis, 422.
  lachrymosa rostrata, 420.
  lachrymosus, 420.
  nana, 421.
  triangularis, 420.
  triangularis æquatorialis, 419.
destructus, Formicarius, 389.
  Formicarius nigricapillus, 389.
devillei, Brotogeris, 261.
  Brotogerys, 261.
diadema, Catamblyrhynchus, 554.
Diallactes granadensis, 364.
dichrous, Cyphorhinus, 528.
  Leucolepis, 528.
Dichrozona cinctus, 385.
  zononota, 385.
Diglossa albilatera, 581.
  albilateralis, 581.
  aterrima, 581.
  brunneiventris, 59, **580**.
  cærulescens, 582.
  cærulescens pallida, 582.
  cryptorhis, 582.
  gloriosa, 580.
  gloriosissima, 59, 160, **580**.
  humeralis, 581.
  indigotica, 582.
  lafresnayei, 581.
  personata, 582.
  similis, 579.
Diglossa sittoides, 579.
  sittoides similis, 579.
Diglossopis cærulescens cærulescens, 582.
dignus, Chloronerpes, 352.
  Veniliornis, 352.
Diplopterus nævius, 323.
Dippers, 529.
discolor, Dendrocygna, 233.
  Molothrus, 631.
discors, Anas, 233.
  Querquedula, 233.
Distributional List of Birds Collected in Colombia by the American Museum's Expeditions, 170.
Diva vassori, 592.
diversus, Leptopogon amaurocephalus, 450.
dives, Hylopezus dives, 398.
doliatus, Lanius, 367.
  Thamnophilus doliatus, 367.
dominica, Anas, 235.
dominicensis, Lanius, 478.
  Progne, 502.
  Tyrannus, 478.
dominicus, Charadrius, 222.
  Charadrius dominicus, 222.
  Nomonyx, 235.
  Tachybaptus, 221.
Donacobius albovittatus, 530.
  atricapillus, 123, 530; range of, figured, 123.
  atricapillus albovittatus, 530.
  brachypterus, 530.
d'orbignyi, Uncirostrum, 580.
dorsalis, Automolus, 409.
  Pachyrhamphus, 126, **493**.
Doryfera ludoviciæ ludoviciæ, 278.
Doves, 201.
dryas, Catharus, 538.
  Malacocichla, 538.
Drymophila caudata caudata, 378.
  caudata striaticeps, 378.
Dryobates lignarius, 174.
  scalaris, 174.
Dryocopus lineatus, 356.
  malherbei, 355.
dubusi, Leptoptila, 211.
  Leptotila rufaxilla, **211**, 212.
Dubusia auricrissa, 608.

Dubusia gigas, 603.
    tæniata, 606.
dubusia, Iridosornis, 601.
    Iridosornis dubusia, 601.
    Tanagra, 601.
Ducks, 233.
Dysithamnus ardesiacus ardesiacus, 373.
    capitalis, 372.
    capitalis capitalis, 372.
    extremus, 370.
    flemmingi, 372.
    leucostictus, 372.
    mentalis, 370, **371**.
    mentalis lateralis, 371.
    puncticeps, 372.
    puncticeps flemmingi, 372.
    puncticeps puncticeps, 372.
    semicinereus, 370, 371.
    semicinereus extremus, 370.
    semicinereus semicinereus, 370.
    unicolor, 365.

East Andean Subtropical Fauna, 149.
Ecuador, collections from, 6, 9.
Eder, Charles J., acknowledgement to, 8, 22.
Eder, Phanor, acknowledgement to, 8, 10.
edwardsi, Buthraupis, 604.
egregia, Dacnis egregia, 585.
Egretta candidissima, 164, 229.
egretta, Ardea, 228.
    Herodias, 228.
Elænia albiventris, 456.
    albivertex, 455.
    brachyptera, 456.
    browni, 457.
    cayennensis, 460.
    chiriquensis chiriquensis, 455.
    flavogaster flavogaster, 455.
    flavogaster semipagana, 455.
    frantzi, 457.
    frantzi pudica, 457.
    gigas, 455.
    griseigularis, 456.
    pagana sororia, 455.
    pallatangæ, 456.
    parvirostris, 456.
    pudica brachyptera, 456.
Elænia pudica pudica, 457.
elæodes, Chæmepelia, 209.
elæoprorus, Atlapetes latinuchus, 575.
Elainia chiriquensis, 455.
    incomta, 451.
    littoralis, 431.
    pagana, 455.
    parvirostris, 456.
    pudica, 457.
    stictoptera, 431.
Elanoides forficatus yetapa, 249.
    furcatus, 249.
    yetapa, 249.
elatus, Chrysolampis, 295.
    Trochilus, 295.
    Tyrannulus, 453.
Electron platyrhynchus, 270.
    platyrhynchus minor, **269**, 270.
    platyrhynchus platyrhynchus, **268**, 269, 270.
    platyrhynchus pyrrholæmus, **269**, 270.
    platyrhynchus suboles, 270.
El Eden, explorations in, 35.
elegans, Compsothlypis pitiayumi, 544.
    Hypocnemis, 287.
    Myrmoborus myiotherinus, 387.
    Synallaxis, 402.
    Xiphorhynchus, 422.
elegantior, Synallaxis, 402.
    Synallaxis azaræ, 402.
El Piñon, explorations about, 57.
El Roble, explorations about, 34, 58.
El Vergel, explorations about, 52.
Emberiza americana, 566.
    militaris, 632.
Emberizoides macrourus, 571.
    macrurus, 571.
    sphenurus, 571.
Embernagra brunneinucha, 577.
    chrysoma, 570.
emiliæ, Calliste, 596.
    Phœthornis guyi, 281.
eminulus, Mitrephanes, 472.
    Mitrephanes berlepschi, 472.
emmæ, Cyanolesbia, 307, 308, **309**.
Empidochanes cabanisi, 471.
    pœcilurus, 471.
Empidonax brachytarsus, 474.

Empidonax cabanisi, 471.
  trailli alnorum, 473.
  virescens, 473.
English bird names, 186.
Ensifera ensifera ensifera, 299.
  ensifera schliephackei, 299.
ensifera, Ensifera ensifera, 299.
  Ornismya, 299.
Ephialtes watsoni, 253.
ephippialis, Planesticus albiventer, 126, **536**.
  Turdus, 536.
episcopus, Tanagra, 55.
equifasciatus, Veniliornis nigriceps, 352.
Eranna jucunda, 289.
Eriocnemis aureliæ, 302.
  aureliæ caucensis, 302.
  mosquera bogotensis, 302.
  smaragdinipectus, 300.
Erosion, 156.
erythrocephala, Pipra erythrocephala, 479.
erythrocephalus, Parus, 479.
erythrocercus, Myiarchus, 475.
erythrogaster, Hirundo, 502.
erythrogenys, Tityra inquisitor, 490.
erythromelas, Ardea, 231.
  Ixobrychus, 231.
erythropareia, Oreopeleia, 215.
erythrops Leptopogon, 450.
  Siptornis, 155.
  Synallaxis, 407.
erythropterus, Scytalopus, 360.
erythrophthalma, Anas, 234.
erythropygius, Pteroglossus, 333.
erythrorhynchus, Arremon, 473.
Erythrothlypis salmoni, 617.
erythrotis, Grallaria, 396.
esmeraldæ, Tityra semifasciata, 109, **489**.
etesiaca, Sula, 18.
Eubucco bourcieri bourcieri, 327.
  bourcieri occidentalis, 327.
  bourcieri salvini, 327.
  richardsoni granadensis, 327.
  richardsoni richardsoni, 327.
Eucephala grayi, 289.
  humboldti, 289.
Euchætes coccineus, 613.
eucharis, Henicorhina leucosticta, 522.
eucharis, Henicorhina prostheleuca, **522**, 524, 525.
Euchlornis arcuata, 498.
  jucunda, 499.
  lubomirski, 499.
  riefferi melanolæma, 498.
  riefferi occidentalis, 498.
  riefferi riefferi, 498.
Eucinetus, **265**.
  barrabandi, 265.
  caica, 265.
  coccineicollaris, 265.
  hæmatotis, 265.
  pulchra, **264**, 265.
Eucometis cassini, 617.
  cristata, 617.
  cristata cristata, 617.
Euphonia, 587.
  aurea pileata, 588.
  brevirostris, 589.
  chrysopasta, 591.
  concinna, 589.
  crassirostris, 591.
  fulvicrissa, 590.
  fulvicrissa omissa, 590.
  fulvicrissa purpurascens, 590.
  melanura, 591.
  minuta, 590.
  xanthogaster chocoensis, 588.
  xanthogastra, 588.
  xanthogastra chocoensis, 588, 589.
Eupsychortyx cristatus, 173.
  decoratus, 198.
  leucotis, 199.
euryptera, Opisthoprora, 307.
eurypterus, Trochilus, 307.
Eurypyga major, 226.
Eurypygidæ, 226.
Euscarthmus agilis, 448.
  granadensis, 440.
  impiger, 440.
  latirostris, 439.
  meloryphus, 444.
  septentrionalis, 440.
  striaticollis zosterops, 440.
  zosterops, 440.
Euspiza americana, 566.
eusticta, Tangara guttata, 594.
Euetheia bicolor, 560.

Eutoxeres aquila, 284.
    aquila aquila, 284.
    aquila heterura, 285.
    aquila salvini, 284.
    baroni, 285.
    condaminii, 284.
    salvini, 284.
excelsior, Upucerthia excelsior, 401.
exiguus, Tachytriorchis albicaudatus, 242.
exile, Todirostrum, 444.
exilis, Ixobrychus exilis, 232.
eximia, Buthraupis eximia, 604.
    Tanagra, 604.
exortis, Heliangelus, 304.
    Trochilus, 304.
exortivus, Rhynchocyclus sulphurescens, 435.
Expedition, Number 1, Buenaventura to the Cauca Valley; Reconnaissance, Cali to Giradot over the Quindio Pass, 21; Number 2, The Popayan Region, 30; Number 3, Lower end of the Cauca Valley; the Quindio Trail, 32; Number 4, Cali to San Agustin, 40; Number 5, San Agustin to the Caquetá Region, 45; Number 6, Tumaco to Barbacoas, 49; Number 7, explorations in the Bogotá Region, 50; Number 8, the Antioquia Region, 58.
exquisita, Psittacula, 261.
exsul, Chlorophanes spiza, 586.
    Myrmeciza, 121, 383; known range, figured, 121.
    Myrmelastes, 383.
extremus, Dysithamnus, 370.
    Dysithamnus semicinereus, 370.

faceta, Piranga testacea, 613.
Factors in Zone Formation, 92.
falcatus, Campylopterus, 285.
    Trochilus, 285.
Falco americanus, 239.
    bidentatus, 250.
    buffoni, 240.
    cachinnans, 248.
    cheriway, 238.
    fusco-cærulescens, 250.
Falco hudsonius, 239.
    isidori, 247.
    magnirostris, 243.
    nigricollis, 247.
    nitidus, 243.
    ornatus, 248.
    plumbeus, 250.
    rufigularis, 250.
    superciliosus, 241.
    tyrannus, 248.
    uncinatus, 249.
    urubitinga, 247.
Falconidæ, 238.
Falcons, 238.
fanniæ, Thalurania, 291.
fanny, Aglaia, 598.
    Calospiza larvata, 598.
    Tangara larvata, 598.
fannyi, Thalurania, 291.
    Thalurania fannyi, **291**, 292.
    Trochilus, 291.
fasciata, Atticora, 504.
    Hirundo, 504.
fasciativentris, Thryothorus, 515.
fasciato-ventris, Pheugopedius fasciatoventris, 515.
    Thriothorus, 515.
fasciatus, Cymbilanius lineatus, 109, 363.
    Muscicapa, 468.
    Myiobius fasciatus, 468.
Fauna, Amazonian, 95, 133; Caribbæan, 95, 130, 132; Cauca-Magdalena, 95, 117–131; Colombian-Pacific, 95, 106; East Andean Subtropical, 149; Orinocan, 95, 132; Subtropical, 135; Tropical, 106; West Andean Subtropical, 145.
Fauna, list of species and subspecies which characterize the Colombian-Pacific, 115; list of species and subspecies which characterize the Humid Cauca-Magdalena, 127; list of species and subspecies which characterize the East Andean, 150; list of species found in the Tropical Zone of southeastern Colombia, eastern Ecuador, western Colombia and northwestern Ecuador; list of species and subspecies which characterize

the West Andean Subtropical, 146; list of species and subspecies which characterize the westward extension of the Orinocan, 133.
ferox, Glaucidium, 255.
    Myiarchus, 475.
ferruginea, Helianthea cœligena, **298**.
fidelis, Dendrobates, 353.
    Veniliornis, 353.
filicauda, Cirrhipipra, 482.
    Pipra, 482.
Finches, 555.
    Plush-capped, 554.
Finfeet, 220.
finitimum, Todirostrum cinereum, 438.
Finlandia, 28.
flammea, Strix, 256.
flammeus, Asio flammeus, 252.
flammigerus, Ramphocelus, 187, **610**, 611.
    Ramphopis, 610.
flammulata, Siptornis flammulata, 407.
flammulatus, Anabates, 412.
    Thripadectes, 412.
flaveola, Fringilla, 565.
    Sicalis, 565.
    Sycalis, 565.
flaveolus, Manacus, 486.
    Manacus manacus, 112, 126, **486**.
flavescens, Boissonneaua flavescens, 140, **300**.
    Panoplites, 300.
    Trochilus, 300.
flavicans, Myiobius, 467.
flavicapilla, Chloropipo, 483.
    Pipra, 483.
flaviceps, Atlapetes, 35, 574.
flavicrissus, Cassicus, 627.
flavifrons, Lanivireo, 540.
    Tyranniscus, 454.
flavigastra, Cotyle, 505, 506.
flavigula, Melanerpes, 52, **350**.
flavigularis, Chlorospingus flavigularis, 619.
    Machetornis rixosus, 432.
    Melanerpes, 350.
    Pipilopsis, 619.
    Platyrhynchus, 433.
    Platytriccus, 433.
flavipectus, Chlorospingus, 618.
flavipectus, Cyclarhis flavipectus, 541, 542.
flavipes, Gambetta, 223.
    Hylophilus, 540.
    Pachysylvia flavipes, 540.
    Scolopax, 223.
    Totanus, 223.
flavirostris, Amblycercus holosericeus, 629.
    Grallaricula, 155, 400.
    Monasa, 344.
    Pteroglossus, 333.
    Pteroglossus flavirostris, 333.
flaviventer, Rallus, 218.
flaviventris, Porzana, 218.
    Rhynchocyclus, 437.
flavogaster, Elænia flavogaster, 455.
    Pipra, 455.
flavo-olivaceus, Rhynchocyclus sulphurescens, 434, 436.
flavopectus, Arremon, 618.
flavotinctus, Picumnus olivaceus, 357.
flavoviridis, Vireo, 539.
    Vireosylva flavoviridis, 539.
flemmingi, Dysithamnus, 372.
    Dysithamnus puncticeps, 372.
Flickers, distribution of, 175.
Florencia, explorations about, 48; list of characteristic Amazonian species collected at, 134.
Floricola longirostris, 311.
Florida cærulea, 164, 229.
florida, Tangara florida, 593.
Florisuga mellivora, 286.
    mellivora mellivora, 286.
fluviatilis, Agyrtrina, 286.
    Thaumatias, 286.
Fluvicola pica, 431.
Flycatchers, Tyrant, 427.
Forests, Cauca Valley, 78, 124; Cauca-Magdalena, 74, 89; Cloud, 78; Magdalena Valley, 124; Maracaibo Basin, 75; Mountain, 78; Pacific Coast, 73, 89; remarks on the distribution of, 72; Santa Marta, 74; Sierra Nevada, 75; Subtropical Zone, 78, 136; Temperate Zone, 78; Tropical Zone, 72, 122.
Formicariidæ, 363.
Formicarius analis, 52.

Formicarius analis connectens, **389**, 390.
  analis saturatus, 122, 389, **390**.
  colma nigrifrons, 388.
  destructus, 389.
  hoffmanni, 390.
  moniliger umbrosus, 389.
  nigricapillus destructus, 389.
  nigricapillus nigricapillus, 389.
  nigrifrons, 388.
  nigrifrons glaucoptera, 389.
  rufipectus, 147, 155.
  rufipectus carrikeri, 146, 147, **390**.
  rufipectus rufipectus, 390.
  saturatus, 390.
  thoracicus, 147.
  torquatus, 388.
  umbrosus, 389.
Formicivora callinota, 378.
  caudata, 378.
  consobrina, 378.
  grisea, 376.
  intermedia, 376.
  melæna, 374.
  ornata, 374.
  quixensis, 378.
  quixensis consobrina, 378.
  schisticolor, 375.
Forms described, new, 181.
fortirostris, Myiarchus, 475.
francescæ, Calliste, 598.
franciæ, Agyrtria, 287.
  Trochilus, 287.
  Uranomitra, 287.
frantzi, Elænia, 457.
Fraser, Alice K., acknowledgement to, 11.
Fraser, L., publications by, 11.
fraseri, Celeus loricatus, 354.
  Conirostrum, 163, 583.
  Glaucis, 279.
  Threnetes, 279.
  Threnetes ruckeri, 279.
frater, Herpsilochmus, 376.
  Herpsilochmus rufomarginatus, 376.
fraterculus, Thamnophilus doliatus, 368.
Fresnado, 27.
Fringilla flaveola, 565.
  gutturalis, 558.
  rubra, 613.
Fringilla splendens, 561.
Fringillidæ, 555.
frontalis, Nonnula, 344.
  Ochthœca, 428.
  Tyrannula, 428.
Fuertes, Louis Agassiz, work by, 9, 10, 21, 50.
fuertesi, Hapalopsittaca, **264**, 265.
  Pionopsitta, 264.
Fulica americana americana, 220.
  americana columbiana, 163, 164, **220**.
  cajanea, 217.
  martinica, 220.
  spinosa, 225.
fulica, Colymbus, 220.
  Heliornis, 220.
fuliginata, Dacnis venusta, 585.
fuliginosa, Schizœaca, 402.
  Synallaxis, 402.
Fuligula affinis, 235.
  nationi, 234.
fulvescens, Herpetotheres cachinnans, 248, **249**.
fulvicauda, Basileuterus, 109.
  Muscicapa, 553.
fulvicrissa, Euphonia, 590.
fulvidus, Bucco, 342.
fulvigularis, Myiobius, 469.
  Terenotriccus erythrurus, 469.
fulvipectus, Craspedoprion, 343.
  Cyclorhynchus, 434.
  Rhynchocyclus, 434.
fulviventris, Brachygalba fulviventris, 133, 338.
  Hylopezus, 398.
  Myrmopagis, 374.
fumicolor, Ochthœca, 428.
  Ochthœca œnanthoides, 428.
fumigata, Ochthodiæta, 427.
fumigatus, Picus, 351.
  Tyrannula, 427.
  Veniliornis oleaginus, 351.
fumosa, Chætura, 277.
  Chætura spinicauda, 277.
funereus, Oryzoborus, 556.
furcatus, Elanoides, 249.
Furnarius agnatus, 126, 131, **400**.
  rosarius, 531.

fusca, Dendroica, 545.
    Glaucis hirsuta, 280.
    Malacoptila, 342.
    Motacilla, 545.
fuscicapillus, Copurus, 432.
    Copurus colonus, 432.
fuscicauda, Attila, 495.
fuscicaudata, Amazillis, 288.
fuscifrons, Synallaxis, 405.
    Synallaxis cinnamomea, 405.
fuscipennis, Tinamus major, 189.
fuscobrunneus, Planesticus, 533.
fusco-cærulescens, Falco, 250.
fuscocinerea, Lathria, 494.
    Lathria fuscocinerea, 494.
fusco-cinerea, Querula, 494.
fusco-olivaceus, Atlapetes, 575.
fuscus, Bucco, 342.
Fusugasugá, explorations about, 57.

Galbalcyrhynchus leucotis, 339.
    leucotis innotatus, 339.
    purusianus, 339.
galbraithi, Thryophilus galbraithi, 512.
galbraithii, Thryothorus, 512.
Galbula albirostris chalcocephala, 337.
    (Brachygalba) inornata, 338.
    chalcocephala, 337.
    melanogenia, 336.
    ruficauda, 126, 336.
    ruficauda brevirostris, 336.
    ruficauda pallens, 336.
    ruficauda pallida, 336.
    ruficauda ruficauda, 336.
    tombacea, 336.
    tombacea tombacea, 336.
Galbulidæ, 336.
galeata, Gallinula, 164, 219.
    Gallinula chloropus, 219.
galeatus, Xanthoura yncas, 52, 150, **637**.
Gallera, explorations about, 32.
Galliformes, 194.
Gallinago brasiliensis, 225.
    delicata, 224.
    jamesoni, 225.
    nobilis, 55, **225**.
    wilsoni, 224.
Gallinula chloropus galeata, 219.
    chloropus pauxilla, 219.
Gallinula galeata, 164, 219.
Gallinules, 216.
Gambetta flavipes, 223.
    melanoleuca, 223.
garrula, Ortalis, 197.
garrulus, Phasianus, 197.
Garzetta candidissima, 229.
gayi, Lafresnaya, 299.
Gazeteer of Colombian collecting stations, 640–656.
Geese, 233.
Genera, treatment of, 171.
genibarbis, Xenops, 414.
geoffroyi, Schistes, 310.
    Trochilus, 310.
geospizopsis, Phrygilus, 12.
    Phrygilus unicolor, 572.
Geothlypis æquinoctialis, 548.
    philadelphia, 546.
    semiflava, 547.
Geotrygon bourcieri, 146, 214.
    linearis, 215.
    montana, 213.
    veraguensis, 214.
    veraguensis cachaviensis, 214.
gerontodes, Pionias, 263.
    Pionus seniloides, 263.
gibsoni, Chlorostilbon, 290.
    Trochilus, 290.
gigantodes, Merula gigas, 31.
    Semimerula gigas, 29, **537**.
    Turdus, 537.
gigas, Buthraupis cucullata, 603.
    Cyanerpes, 18.
    Cyanerpes cyaneus, 536.
    Dubusia, 603.
    Elænia, 455.
    Elainea, 455.
    Merula, 536.
    Planesticus, 56.
    Semimerula gigas, 136, **536**.
    Turdus, 536, 537.
gilvus, Mimus, 529.
    Nyctidromus albicollis, 274.
Giradot, explorations about, 27.
giraudi, Icterus, 633.
glaber, Sublegatus, 460.
Glaucidium brasilianum brasilianum, 255.

Glaucidium brasilianum medianum, 255.
  brasilianum phalænoides, 255.
  ferox, 255.
  jardini, 255.
Glaucis ænea, 280.
  æneus, 280.
  affinis, 280.
  columbiana, 180.
  fraseri, 279.
  hirsuta, 280.
  hirsuta ænea, 280.
  hirsuta affinis, 280.
  hirsuta fusca, 280.
glaucocolpa, Thraupis, 608.
glaucoptera, Formicarius nigrifrons, 389.
glaucus, Thamnomanes, 373.
gloriosa, Diglossa, 580.
gloriosissima, Diglossa, 59, 160, **580**.
Glyphorhynchus castelnaudi, 417.
  cuneatus castelnaudi, 417.
  cuneatus pectoralis, 417.
  pectoralis, 417.
Gnatcatchers, 507.
Gnateaters, 362.
Godman, F., see Salvin, O.
Goodfellow, Walter, and Claud Hamilton, collections by, 18.
goodfellowi, Planesticus ignobilis, 535.
  Turdus ignobilis, 535.
goodsoni, Columba, 203.
Gorgona Island, vertebrates of, 18.
gorgonæ, Cœreba, 18.
  Thamnophilus, 18.
goudoti, Chamæpetes goudoti, 197.
  Cyanophaia, 287.
  Lepidopyga, 287.
  Trochilus, 287.
goudotii, Chamæpetes, 197.
  Ortalida, 197.
gouldi, Psalidoprymna gouldi, 310.
  Trochilus, 310.
gracilis, Coccyzusa, 322.
  Piaya rutila, 322.
Grallaria alleni, 395.
  brevicauda brevicauda, 397.
  brevicauda minor, 397.
  erythrotis, 396.
  guatimalensis, 395.
Grallaria guatimalensis **chocoensis**, **394**.
  guatimalensis princeps, 394.
  hypoleuca, 396.
  milleri, 396.
  minor, 397.
  modesta, 397.
  monticola, 395.
  nana, 400.
  nuchalis, 395.
  periopthalmica, 398.
  perspicillata, 399.
  regulus, 395.
  ruficapilla, 53, 396.
  ruficapilla ruficapilla, 396.
  ruficeps, 31, 36, **395**.
  rufocinerea, 395.
  rufula, 398.
  rufula obscura, 398.
  squamigera, 394.
  varia, 395.
Grallaricula costaricensis, 399.
  cucullata, 400.
  flavirostris, 155, 400.
  flavirostris brevis, 399, 400.
  nana, 400.
  vegeta, 399, 400.
granadense, Todirostrum, 440.
granadensis, Calliste cæruleocephala, 599.
  Calospiza granadensis, 599.
  Diallactes, 364.
  Eubucco richardsoni, 327.
  Euscarthmus, 440.
  Myiozetetes, 461.
  Picumnus, 357, 358.
granadensis, Picumnus granadensis, 358.
  Picumnus olivaceus, 37, 358.
  Pyroderus, 176, 500.
  Pyroderus scutatus, 140, 177, 500.
  Tangara cyaneicollis, 599.
  Taraba transandeana, 364.
granatina, Chamæpelia, 208.
  Columbigallina passerina, 208.
grandis, Phrygilus unicolor, 572.
gratiosa, Mecocerculus, 429.
  Ochthœca gratiosa, 429.
grayi, Eucephala, 289.
  Hylocharis, 289.
  Trochilus, 289.
Grebes, 221.

grisea, Butorides, 230.
  Formicivora, 376.
  Loxia, 557.
  Serpophaga cinerea, 447.
  Spermophila, 557.
  Sporophila, 557.
  Sporophila grisea, 557.
griseiceps, Phyllomyias griseiceps, 450.
  Tyranniscus, 450.
griseicollis, Merulaxis, 360.
  Scytalopus, 359, **360**, 361.
griseigularis, Acrorchilus erythrops, 407.
  Aulacorhamphus albivitta, 335.
  Elænia, 456.
  Siptornis erythrops, 407.
griseodorsalis, Ramphocænus rufiventris, 379.
griseogularis, Phœthornis, 283.
griseolum, Todirostrum schistaceiceps, 439.
griseo-murina, Schizœca, 402.
griseus, Heleodytes, 509.
  Tyrannus, 478.
Grosbeaks, 555.
grossa, Loxia, 561.
grossus, Pitylus, 561.
Gruiformes, 226.
gryphus, Sarcoramphus, 237.
  Vultur, 237.
Guans, 194.
guatemalensis, Amaurolimnas concolor, 217.
  Chlorophanes, 586.
  Corethura, 217.
guatimalensis, Grallaria, 395.
guatimozinus, Cassicus, 623.
  Gymnostinops, 119, **623**.
  Ostinops, 623.
guerini, Oxypogon, 306.
guianensis, Myiozetetes, 460.
  Nyctidromus, 274.
guimeti, Klais, 312.
  Trochilus, 312.
Guiraca cyanoides, 555.
guirina, Hemithraupis guira, 617.
  Nemosia, 617.
Guit-guits, 578.
gujanensis, Synallaxis gujanensis, 405.
gularis, Chloronerpes, 347.
gularis, Chloronerpes rubiginosus, 347.
  Paroaria, 573.
  Synallaxis, 406.
  Synallaxis gularis, 406.
  Tanagra, 573.
Gulls, 221.
guttata, Calliste, 594.
  Henicorhina leucophrys, 55, **525**, 527.
  Margarornis, 416.
  Ortalis, 197.
  Penelope, 197.
  Premnornis, 416.
guttatoides, Nasica, 419.
  Xiphorhynchus guttata, 419.
guttatus, Chrysoptilus, 349.
  Chrysoptilus punctigula, 348.
  Picus, 348.
  Troglodytes, 525, 526.
gutturalis, Arremon, 575.
  Atlapetes, 151, 154; distribution of, figured, 154.
  Buarremon, 575.
  Fringilla, 558.
  Phœnicothraupis, 615.
  Spermophila, 558.
  Sporophila, 558.
gutturosus, Manacus manacus, 486.
Gymnocichla nudiceps sanctæ-martæ, 385.
Gymnopithys bicolor daguæ, 382.
gymnophthalmus, Planesticus, 534.
  Turdus, 534.
Gymnostinops guatimozinus, 119, **623**.
  yuracares, 624.
  yuracares caurensis, 624.
Gypagus papa, 237.
gyroloides, Aglaia, 596.
  Calliste, 596.
  Calospiza, 596.
  Calospiza gyroloides, 596.
  Tangara gyroloides, 596.

Habrura pectoralis bogotensis, 164, **445**.
  pectoralis brevipennis, 445.
  pectoralis pectoralis, 445.
hæberlini, Chlorestes, 290.
  Chlorostilbon, 290.
hæmatogaster, Campephilus, 355.
hæmatonota, Myrmopagis, 374.

hæmatopygius, Aulacorhamphus, 335.
Aulacorhynchus, 124, **335**.
Pteroglossus, 335.
hæmatostigma, Mesopicus, 353.
Veniliornis ruficeps, 353.
hæmatotis, Eucinetus, 265.
Hamilton, Claud, 18; see Goodfellow, Walter.
Hapalocercus acutipennis, 445.
meloryphus, 126, **444**.
paulus, 444.
Hapalopsittaca, 265.
amazonina, **264**, 265.
fuertesi, **264**, 265.
pyrrhops, 265.
hapalopteryx, Cænotriccus ruficeps, 442.
Harpagus bidentatus, 250.
Harpiprion cayennensis, 227.
harrisi, Buteo, 241.
Parabuteo unicinctus, 241.
harterti, Crypturus soui, 192.
Heleodytes, 510.
Heleodytes albobrunneus, 510.
Picumnus olivaceus, **357**, 358.
Pittasoma, 392.
hauxwelli, Anurolimnas, 218.
Porzana, 218.
Hawks, 238.
hederaceus, Mionectes olivaceus, 448.
Hedymeles ludovicianus, 555.
Heleodytes albobrunneus harterti, 510.
bicolor, 509.
brevirostris, 126, 131.
griseus, 509.
harterti, 510.
minor bicolor, 126, 131, **509**.
nuchalis, 511.
nuchalis nuchalis, 511.
pardus, 511.
turdinus hypostictus, 510.
turdinus striaticollis, 510.
zonatus brevirostris, 511.
Heliangelus exortis, 304.
exortis soderstromi, 304, 305.
Helianthea bonapartei, 297.
cœligena columbiana, 298.
cœligena **ferruginea**, **298**.
helianthea, 297.
lutetiæ lutetiæ, 297.
Helianthea torquata, 297.
helianthea, Helianthea, 297.
Ornismya, 297.
Heliochera rubrocristata, 499.
rufaxilla, 500.
heliodor, Chætocercus, 312.
Ornismya, 312.
Heliodoxa leadbeateri, 296.
leadbeateri parvula, 296.
Heliomaster stewartæ, 311.
Heliornis fulica, 220.
Heliornithidæ, 220.
Heliothryx barroti, 310.
Heliotrypha parzudakii, 304.
Hellmayr, C. E., publications by, 17, 18.
hellmayri, Leptotila rufaxilla, 211.
Helminthophaga chrysoptera, 543.
peregrina, 543.
Helminthophila chrysoptera, 543.
peregrina, 543.
Helodromas solitarius solitarius, 223.
Hemipipo tschudi, 483.
Hemiprocne albicincta, 277.
zonaris, 277.
Hemispingus atropileus, 620.
frontalis oleagineus, 621.
melanotis, 621.
rubrirostris, 620.
superciliaris nigrifrons, 621.
superciliaris superciliaris, 621.
Hemistephania ludoviciæ, 278.
Hemithraupis guira guirina, 617.
peruana, 617.
salmoni, 617
Henicocichla noveboracensis, 547.
Henicorhina leucophrys, 525, 526.
leucophrys berlepschi, 525, 526.
leucophrys brunneiceps, 527.
leucophrys guttata, 55, **525**, 527.
leucosticta, 522.
leucosticte eucharis, 522.
inornata, 524.
prostheleuca **albilaterialis**, **524**.
prostheleuca eucharis, 522, 524, 525.
prostheleuca pittieri, 523, 525.
prostheleuca prostheleuca, 523.
Henn, Arthur, publications by, 110.
Herodias egretta, 228.
Herons, 228.

Herpetotheres cachinnans, 248.
  cachinnans cachinnans, 248.
  cachinnans fulvescens, 248, **249**.
  sociabilis, 249.
Herpsilochmus frater, 376.
  rufomarginatus frater, 376.
herrani, Chalcostigma, 306.
  Trochilus, 306.
hesperius, Dendrocolaptes sancti-thomæ, 427.
Heterocnemis marginata, 528.
Heteropelma rosenbergi, 487.
  stenorhynchus, 488.
  veræpacis, 488.
heteropogon, Chalcostigma, 306.
  Ornismya, 306.
  Ramphomicron, 306, 307.
Heterospingus xanthopygius, 615.
heterura, Eutoxeres, 285.
  Eutoxeres aquila, 285.
heterurus, Pyrocephalus rubineus, 470.
  Pyrocephalus rubinus, 470.
  Xenops, 414.
  Xenops rutilus, 414.
Hettner, Dr. Alfred, publications by, 76, 77, 86, 90.
Himantopus mexicanus, 223.
  nigricollis, 223.
hirsuta, Glaucis, 280.
Hirundinea sclateri, 464.
Hirundinidæ, 501.
Hirundo albiventris, 501.
  chalybea, 502.
  cyanoleuca, 505.
  erythrogaster, 502.
  fasciata, 504.
  riparia, 501.
  ruficollis, 505.
Hoatzins, 216.
hoazin, Opisthocomus, 216.
  Phasianus, 216.
hoffmanni, Formicarius, 390.
holerythrus, Lipaugus, 495.
  Lipaugus holerythrus, 495.
holochlora, Chloropipo, 483.
  Chloropipo holochlora, 483.
holosericeus, Amblycercus holosericeus, 629.
holostictus, Automolus, 409.
homochroa, Catamenia, 560.
  Catamenia homochroa, 559.
homochrous, Pachyrhamphus, 490.
  Platypsaris homochrous, 490.
Homophania cœligena colombiana, 298.
Honda, explorations about, 52.
hondæ, Icterus, 634.
  Microrhopias grisea, 376.
Honey-Creepers, 578.
hopkei, Carpodectes, 499.
Howes, Paul G., work by, 9, 10, 50.
hudsonicus, Circus, 239.
hudsonius, Circus, 239.
  Falco, 239.
humboldti, Eucephala, 289.
  Hylocharis, 289.
  Pteroglossus, 333.
humeralis, Agrilorhinus, 581.
  Diglossa, 581.
humilis, Phonasca, 590.
  Tanagra olivacea, 590.
Hummingbirds, 278; method of collecting, 12, 179, 180.
Hydranassa tricolor tricolor, 229.
Hydrocorax vigua, 236.
Hydropsalis climacocerca, 274.
  climacocercus, 274.
  lyra, 273.
Hylactidae, 359.
Hylocharis grayi, 289.
  humboldti, 289.
Hylocichla aliciæ, 537.
  aliciæ aliciæ, 537.
  ustulata swainsoni, 538.
Hyloctistes subulatus assimilis, 408.
  subulatus subulatus, 408.
Hylomanes momotula obscurus, 272.
Hylopezus dives barbacoæ, 398.
  dives dives, 398.
  fulviventris, 398.
  perspicillata periopthalmica, 398.
  perspicillata perspicillata, 399.
Hylophilus flavipes, 540.
  minor, 541.
  semibrunneus, 540.
Hylophylax lepidonota, 387.
  nævia theresæ, 387.
  nævioides, 387.
hyperythrus, Odontophorus, 200.

Hypnelus ruficollis ruficollis, 341.
Hypocnemis cantator peruviana, 386.
  elegans, 387.
  hypoxantha, 386.
  lepidonota, 387.
  nævioides, 387.
  peruviana, 386.
hypoglaucus, Andigena, 161, **330**.
  Pteroglossus, 330.
hypoleuca, Grallaria, 396.
hypoleucus, Capito, 19, **326**.
Hypolophus pulchellus, 367.
hypomelæna, Parra, 226.
hypophæus, Chlorospingus flavigularis, 619.
Hypopyrrhus pyrohypogaster, 28, **635**.
hypospodius, Buteo, 242.
  Pheugopedius, 517.
  Thryothorus, 517.
hypostictus, Campylorhynchus, 510.
  Heleodytes turdinus, 510.
Hypotriorchis rufigularis, 250.
hypoxantha, Hypocnemis, 386.
Hypoxanthus brevirostris, 346.
  rivolii, 346.
  rivolii brevirostris, 346.
  rivolii rivolii, 345.
Hypuroptila buffoni, 293.
  urochrysa, 293.

Ibagüe, 30.
Ibididæ, 227.
Ibises, 227.
Ibycter americanus, 239.
  aquilinus, 239.
icterocephala, Calliste, 595.
  Calospiza, 595.
  Tangara, 595.
icterocephalus, Agelaius icterocephalus, 632.
  Oriolus, 632.
  Xanthosomus, 632.
icteronotus, Cassicus, 627.
  Ramphocelus, 187, **612**.
icterotis, Conurus, 258.
  Ognorhynchus, 29, 258.
Icterus auratus, 634.
  auricapillus, 633.
  giraudi, 633.
Icterus hondæ, 634.
  mesomelas, 633.
  mesomelas salvini, 633.
  salvini, 633.
  spurius, 633.
  xanthornus xanthornus, 634.
Ictinia plumbea, 250.
Idiotriccus zeledoni, 451.
ignicapillus, Iridosornis dubusia, 601.
ignobilis, Automolus, 409.
  Merula, 534.
  Momotus brasiliensis, 271.
  Momotus momota, 271.
  Planesticus ignobilis, 56, **534**.
  Turdus, 534.
immaculata, Phæoprogne tapera, 502.
immaculatus, Myrmeciza immaculatus, 384.
  Myrmelastes, 52, 122.
  Myrmelastes immaculatus, 384.
impiger, Euscarthmus, 440.
implacens, Myiopagis viridicata, 458, 459.
inca, Ramphastos, 330.
incomta, Elainea, 451.
  Phæomyias murina, 451.
inda, Alcedo, 267.
  Ceryle, 267.
  Chloroceryle, 267.
indigotica, Diglossa, 582.
inexpectata, Arremonops conirostris, 113, 122, **570**.
Inezia caudata intermedia, 447.
infasciata, Cinnicerthia olivascens, 508.
infasciatus, Scytalopus, 361.
infuscatus, Anabates, 410.
  Automolus infuscatus, 410.
innotatus, Galbalcyrhynchus leucotis, 339.
inornata, Amazona, 262.
  Calliste, 598.
  Chrysotis, 262.
  Galbula (Brachygalba), 338.
  Henicorhina, 524.
  Tangara inornata, 598.
inquisitor, Tityra, 490.
insignis, Dendrornis, 422.
  Xiphorhynchus, 422.
insolitus, Xiphorhynchus æquatorialis, 420.

Instituto de la Salle, 8.
interior, Manacus manacus, 112, **486**.
    Myrmopagis schisticolor, 375.
intermedia, Cerchneis sparveria, 251.
    Certhiola, 578.
    Formicivora, 376.
    Inezia caudata, 447.
    Microrhopias grisea, 476.
intermedius, Capito auratus, 326.
    Pachyrhamphus castaneus, 492.
    Thamnistes anabatinus, 369.
interstes, Micrastur, 241.
    Micrastur guerilla, 241.
iolata, Colibri, 295.
    Petasophora, 295.
Ionornis martinica, 220.
    martinicus, 220.
iridescens, Anthracothorax, 295.
Iridoprocne albiventris, 501.
Iridosornis dubusia, 601.
    dubusia cæruleoventris, 601.
    dubusia dubusia, 601.
    dubusia ignicapillus, 601.
    porphyrocephala, 602.
isadorei, Pipra, 481.
    Pipra isadorei, 481.
isidori, Falco, 247.
    Lophotriorchis, 248.
isidorii, Lophotriorchis, 248.
    Spizaëtus, 248.
isthmica, Chloroceryle americana, 266.
Ixobrychus erythromelas, 231.
    exilis bogotensis, 163, 164, **231**, 445.
    exilis exilis, 232.

Jabiru mycteria, 228.
Jacamars, 336.
Jacana, 225.
    melanopygia, 225.
    nigra, 226.
    spinosa, **225**, 226, 660.
jacarina, Volatinia, 561.
jacquaçu, Penelope, 196.
jamesoni, Gallinago, 225.
    Xylocota, 225.
jardini, Boissonneaua, 300.
    Glaucidium, 255.
    Spodiornis, 573.
jardinii, Phalæopsis, 255.
jardinii, Trochilus, 300.
Jays, 636.
jesupi, Ochthœca gratiosa, 430.
johannæ, Calliste, 593.
    Calospiza, 593.
    Tangara, 593.
johannis, Phœthornis yaruqui, 281.
Jonornis martinica, 220.
josephæ, Vireo, 540.
    Vireosylva josephæ, 540.
Juanchito, collecting in, 22, 26.
jucunda, Amazilia tzacatl, 289.
    Amizilis tzacatl, 288, **289**.
    Eranna, 289.
    Euchlornis, 499.
    Pipreola, 499.
jugularis, Brotogeris, 124, 131, **261**.
    Brotogerys, 261.
    Psittacus, 261.
juliæ, Damophila juliæ, 290.
    Juliamyia, 290.
    Ornismya, 290.
Juliamyia juliæ, 290.
julius, Nothocercus, 190.
    Tinamus, 190.
Juntas de Tamaná, collections from, 33; explorations about, 39.

keaysi, Ochthœca, 442.
Kerr, Mrs. Elizabeth L., collections by 69.
kerriæ, Crypturus, 193.
Kingfishers, 266.
kingi, Cyanolesbia, 309.
    Cyanolesbia kingi, **307**, 308.
    Trochilus, 307.
klagesi, Rhynchocyclus, 437.
Klais guimete, 312.
Knipolegus columbianus, 471.

labradorides, Calliste, 600.
    Calospiza, 600.
    Tanagra, 600.
    Tangara, 600.
La Candela, explorations in, 46.
lachrymosus, Dendrornis, 420.
    Xiphorhynchus lachrymosus, **420**, 421.
lacrymiger, Dendrocolaptes, 423.

lacrymiger, Picolaptes, 423.
    Picolaptes lacrymiger, 423.
Lafresnaya gayi, 299.
Lafresnayea lafresnayi, 298.
    saül saül, 299.
lafresnayei, Dendrocincla, 418.
    Dendrocincla lafresnayei, 418.
    Dendrocincla meruloides, 418.
    Diglossa, 581.
    Uncirostrum, 581.
lafresnayi, Dendrocincla olivacea, 418.
    Lafresnayea, 298.
    Trochilus, 298.
La Frijolera, explorations about, 59.
Laguneta, explorations about, 35.
La Manuelita, 22.
La Morelia, explorations about, 48; list of characteristic species collected at, 134.
Lampornis mango, 295.
    violicauda, 295.
Lampropsar cabanisii, 631.
Lampropygia cœligena, 298.
    columbiana, 298.
lanceolata, Bucco, 344.
    Micromonacha, 118, 344; known distribution of, figured, 118.
Lanius carbo, 609.
    cayana, 488.
    doliatus, 367.
    dominicensis, 478.
    lictor, 463.
    lineatus, 363.
    pitangua, 464.
    punctatus, 366.
    sulphuratus, 462.
    tyrannus, 478.
Lanivireo flavifrons, 540.
La Palma, explorations about, 46.
Laphyctes satrapa, 478.
La Playa, explorations about, 46, 60.
Laridæ, 221.
Lariformes, 221.
Larks, 554.
larvata, Calliste, 598.
lateralis, Dysithamnus mentalis, 371.
Lathria cinerea, 494.
    cryptolopha, 494.
    fuscocinerea, 494.
Lathria fuscocinerea fuscocinerea, **494**.
    unirufa, 494.
    unirufa castaneotincta, 494.
    unirufa clara, 494.
latifrons, Tinamus, 189.
    Tinamus major, 188, **189**.
latinuchus, Atlapetes latinuchus, **575**.
    Buarremon, 575.
latirostre, Todirostrum, 439.
latirostris, Euscarthmus, 439.
latissimus, Buteo, 243.
lavinia, Calliste, 596.
    Calospiza lavinia, 596.
    Tangara lavinia, 596.
lazulus, Trochilus, 285.
leadbeateri, Heliodoxa, 296.
    Trochilus, 296.
Legatus albicollis, 459.
    albicollis albicollis, 459.
Leistes militaris, 632.
leopetes, Caprimulgus, 275.
lepidonota, Hylophylax, 387.
    Hypocnemis, 387.
Lepidopyga cœlina, 287.
    goudoti, 287.
Leptasthenura andicola, 402.
Leptodon cayanensis, 250.
    palliatus, 250.
    uncinatus, **249**, 250.
Leptopogon amaurocephalus, 450.
    amaurocephalus diversus, 450.
    erythrops, 450.
    pœcilotis, 446.
    poliocephalus, 449.
    superciliaris poliocephalus, 449.
Leptoptila dubusi, 211.
    verreauxi, 210.
Leptotila cassini, 213.
    pallida, 213.
    plumbeiceps, 126, **212**.
    rufaxilla, 213.
    rufaxilla dubusi, **211**, 212.
    rufaxilla hellmayri, 211.
    rufaxilla pallidipectus, 133, **212**.
    rufaxilla rufaxilla, 211.
    verreauxi occidentalis, 140, **211**.
    verreauxi verreauxi, 140, **210**, 211.
Leptoxura cinnamomea, 405.
Lesbia amaryllis, 310.

lessoni, Ochthœca, 429.
leucocephala, Arundinicola, 431.
  Pipra, 431.
leucochlamys, Manacus manacus, 486.
leucocilla, Pipra leucocilla, 481.
leucocrissus, Bucco, 340.
  Notharchus hyperrhynchus, 340.
leucogastra, Progne, 502.
leucogenys, Dacnis, 585.
  Merganetta, 236.
leucogonys, Acrochordopus, 451.
  Tyranniscus, 451.
leucolæmus, Chloronerpes, 347.
Leucolepis dichrous, 528.
  phæocephalus phæocephalus, 527.
  salvini, 527.
leuconotus, Cinclus, 29, **529**.
  Copurus, 432.
leucophrys, Capsiempis flaveola, 450.
  Henicorhina, 525, 526.
  Mecocerculus, 430.
  Myrmoborus leucophrys, 386.
  Pithys, 386.
leucopogon, Thryophilus, 513.
leucops, Planesticus, 533.
  Turdus, 533.
leucoptera, Tanagra, 607.
  Thraupis episcopus, 136, **607**.
Leucopternis plumbea, 247.
  semiplumbea, 247.
leucopterus, Thraupis episcopus, 623.
leucopthalmus, Anabates, 409.
leucorhamphus, Cacicus, 628.
  Cassicus, 628.
  Xanthornus, 628.
leucorrhoa, Corapipo, 484.
  Pipra, 484.
leucosticta, Henicorhina, 522.
leucostictus, Cyphorhinus, 522.
  Dysithamnus, 372.
leucotis, Colinus cristata, 122.
  Colinus cristatus, 174, **199**.
  Eupsychortyx, 199.
  Galbalcyrhynchus, 339.
  Ortyx, 199.
  Thriothorus, 511.
  Thryophilus, 511.
  Thryothorus, 511.
lictor, Lanius, 463.
lictor, Pitangus, 463.
  Saurophagus, 463.
Life Zones: ideal section through the Ecuadorian Andes, 87; limits of, 86; of the Colombian Andes, 84–186; semi-diagrammatic profile of, 85.
lignarius, Dryobates, 174.
Limnornis unibrunnea, 508.
  unirufus, 508.
linearis, Columba, 215.
  Geotrygon, 215.
  Oreopeleia linearis, 214, **215**.
lineata, Ardea, 230.
lineaticeps, Picolaptes, 423.
lineatum, Tigrisoma, 230.
lineatus, Ceophlœus lineatus, 356.
  Cymbilaimus lineatus, 363.
  Cymbilanius, 363.
  Dryocopus, 356.
  Lanius, 363.
Lipaugus holerythrus, 495.
  holerythrus holerythrus, 495.
  holerythrus rosenbergi, 495.
  simplex, 495.
  unirufus, 494.
litæ, Chloronerpes, 347.
  Chloropipo holochlora, 483.
  Myiobius, 468.
littoralis, Colinus cristatus, 198.
  Elainea, 431.
  Ochthornis, 431.
  Xenops, 414.
  Xenops genibarbis, 413.
livida, Claravis pretiosa, 210.
Localities cited, sequence of, 185.
Lochmias obscurata, 401.
  sororia, 401.
longicaudatus, Caprimulgus, 272.
  Nyctibius, 272.
longirostris, Anthoscenus longirostris, 311.
  Floricola, 311.
  Vestipedes derbyi, 302.
Lophostrix cristatus stricklandi, 253.
Lophotriccus spicifer, 442.
  squamæcrista squamæcrista, 140.
  squamæcristatus minor, 140, **443**.
  squamæcristatus squamæcristatus, 442.
Lophotriorchis isidori, 248.

Lophotriorchis isidorii, 248.
loricatus, Celeus, 353.
    Celeus loricatus, 353.
    Meiglyptes, 353.
Los Cisneros, explorations about, 21.
Loxia angolensis, 556.
    crassirostris, 556.
    grisea, 557.
    grossa, 561.
    ludoviciana, 555.
    minuta, 557.
lubomirski, Euchlornis, 499.
lubomirskii, Pipreola, 499.
luctuosa, Sporophila, 559.
luctuosus, Tachyphonus, 616.
ludoviciæ, Doryfera ludoviciæ, 278.
    Hemistephania, 278.
    Trochilus, 278.
ludoviciana, Loxia, 555.
    Sturnella, 632.
    Zamelodia, 555.
ludovicianus, Hedymeles, 555.
lugubris, Brachygalba, 339.
lunulata, Pœcilothraupis lunulata, 602.
    Tanagra, 602.
Lurocalis rufiventris, 273.
luteiventris, Myiodynastes, 463.
luteola, Certhiola, 578.
    Cœreba luteola, 578.
luteoviridis, Basileuterus, 550.
    Myiothlypis, 550.
lutetiæ, Helianthea lutetiæ, 297.
    Trochilus, 297.
lyra, Hydropsalis, 273.
    Uropsalis, 273.
Lysurus castaneiceps, 574.

macao, Ara, 256.
    Psittacus, 256.
Macaws, 256.
Machæropterus striolatus, 482.
Machetornis rixosus, 432.
    rixosus flavigularis, 432.
macleannani, Phænostictus macleannani, 388.
    Phlegopsis, 388.
Macraglæus subalaris, 635.
macrodactylus, Argicus, 341.
    Cyppos, 341.
macroura, Trogon, 318.
macrourus, Curucujus melanurus, 318.
    Emberizoides, 571.
    Quiscalus, 635.
    Trogon, 318.
macrurus, Emberizoides, 571.
    Trogon, 318.
macularia, Actitis, 224.
    Tringa, 224.
macularius, Tringoides, 224.
maculata, Pisobia, 224.
    Tringa, 224.
maculatus, Catharus, 539.
maculicoronatus, Capito, 16, 324; range of races of, figured, 114.
    Capito maculicoronatus, 114, 324, 325.
maculifer, Myrmeciza maculifer, 382.
    Myrmelastes exsul, 382.
Magdalena River, collections from the, 15.
Magdalena Valley, explorations in the, 47.
magdalenæ, Microbates cinereiventris, 379.
    Pachyrhamphus, 491.
magellanicus, Scytalopus, 359.
magnirostris, Asturina, 243, 244.
    Falco, 243.
    Phætusa, 222.
    Rupornis, 243.
    Rupornis magnirostris, 243.
magnus, Saltator, 561.
major, Crotophaga, 323.
    Eurypyga, 226.
    Quiscalus major, 635.
    Tinamus, 189.
    Tinamus major, 188.
Malacoptila dryas, 538.
    frontalis, 344.
    fusca, 342.
    mystacalis, **342**, 343.
    panamensis, 343.
    panamensis panamensis, 343.
    panamensis poliopis, 343.
    poliopis, 343.
Malena, explorations about, 60.
malherbei, Dryocopus, 355.
malherbii, Campephilus, 355.

Mammals, number collected, 5, 9.
Manacus aurantiacus, 487.
  flaveolus, 486.
  manacus, 485; distribution of the western races of, 112.
  manacus abditivus, 112, **485**, 486.
  manacus bangsi, 112, **486**.
  manacus flaveolus, 112, 126, **486**.
  manacus gutturosus, 486.
  manacus interior, 112, **486**.
  manacus leucochlamys, 112, **486**, 660.
  manacus manacus, 112, 486.
  manacus malanochlamys, 112, 660.
  manacus purus, 112.
  vitellinus, 485.
  vitellinus milleri, 487.
  vitellinus vitellinus, 126, **487**.
manacus, Chiromachæris, 485.
  Manacus, 485.
  Manacus manacus, 486.
Manakins, 479.
mango, Lampornis, 295.
manimbe, Myospiza, 160, 567.
Maps, character of, 7.
margarethæ, Cyanolesbia kingi, 307, 308.
Margarornis brunnescens, 416.
  guttata, 416.
  perlata, 416.
  stellata, 416.
marginata, Heterocnemis, 528.
marginatus, Chlorospingus flavigularis, 619.
  Microcerculus marginatus, 528.
  Rhynchocyclus, 434, 436.
  Rhynchocyclus marginatus, 436.
Maria, Hermano Apolinar, acknowledgement to, 8, 9; collections from, 69.
Marila affinis, 235.
  brunnea, 234.
  nationi, 126, 234.
marmoratus, Odontophorus, 200.
  Odontophorus guianensis, 200.
  Ortyx, 200.
martii, Momotus, 267.
  Prionites, 267.
  Urospatha, 267.
  Urospatha martii, 267.
martinica, Fulica, 220.
martinica, Ionornis, 220.
  Jonornis, 220.
  Porphyrio, 220.
marticinus, Ionornis, 220.
Martins, 501.
Masius chrysopterus, 483.
  chrysopterus bellus, 484.
  corunulatus, 484.
masoni, Pyroderus, 176.
  Pyroderus scutatus, 177.
massena, Trogon, 318.
maximus, Saltator, 126, **561**.
  Tanagra, 561.
Mean Temperatures, table of, 81.
Mecocerculus gratiosa, 429.
  leucophrys, 430.
  leucophrys setophagoides, 430.
  nigriceps, 430.
  pœcilocercus, 431.
  stictopterus, 431.
  uropygialis, 453.
Medellin, explorations about, 58.
media, Synallaxis azaræ, 402.
medianum, Glaucidium brasilianum, 255.
Megaceryle torquata torquata, 266.
Megaquiscalus macrourus peruvianus, 635.
  major assimilis, 635.
Megarhynchus pitangua, 464.
Megascops brasilianus, 253.
mehleri, Piaya cayana, 319.
Meiglyptes loricatus, 353.
melacoryphus, Coccyzus, 319.
melæna, Formiciva, 374.
  Myrmopagis axillaris, **374**, 375.
  Myrmotherula, 375.
melaleucus, Tachyphonus, 615.
melancholichus, Tyrannus, 27, 478.
Melanerpes cruentatus, 350.
  flavigula, 52.
  flavigularis, 350.
  pucherani pucherani, 351.
  rubricapillus rubricapillus, 351.
  sublegatus neglectus, 351.
  wagleri sanctæ-martæ, 351.
melanoceps, Myrmeciza, 382.
  Thamnophilus, 382.
melanochlamys, Buthraupis, 604.
melanogenia, Galbula, 336.

melanogenys, Adelomyia melanogenys, 304.
melanolæma, Euchlornis riefferi, 498.
melanoleuca, Gambetta, 223.
  Scolopax, 223.
melanoleucus, Campephilus, 355.
  Picus, 355.
  Totanus, 223.
melanops, Porphyriops melanops, 161, 219.
melanoptera, Tanagra, 608.
  Thraupis palmarum, 122, 126, **608**.
melanopterus, Mimus, 529, 530.
  Trogon, 317.
melanopygia, Jacana, 225.
  Parra, 225.
melanorhynchus, Anabates, 409.
  Automolus, 409.
  Chlorostilbon, 290.
melanotis, Calliste, 600.
  Chlorospingus, 621.
  Hemispingus, 621.
  Tangara, 600.
melanura, Euphonia, 591.
  Pyrrhura melanura, 259.
  Tanagra, 591.
melanurus, Curucujus, 113.
  Curucujus melanurus, 318.
  Trogon, 318.
Meleagris cristata, 195.
mellivora, Florisuga, 286.
  Florisuga mellivora, 286.
mellivorus, Trochilus, 286.
meloryphus, Euscarthmus, 444.
  Hapalocercus, 126, **444**.
menstruus, Pionus, 263
  Psittacus, 263.
mentalis, Anabazenops, 413.
  Celeus, 354.
  Celeus loricatus, 354.
  Dysithamnus, 370, **371**.
  Xenicopsis subalaris, 413.
mercenaria, Amazona, 262.
  Chrysotis, 262.
  Psittacus, 262.
Merganetta colombiana, 236.
  columbiana, 29.
  leucogenys, 236.
meridæ, Cistothorus, 518.
meridensis, Chloronerpes rubiginosus, 348.
meridionalis, Sturnella, 56, 632.
  Sturnella magna, 53, **632**.
Merula albiventris, 536.
  gigas, 536.
  gigas gigantodes, 31.
  ignobilis, 534.
Merulaxis grisei-collis, 360.
  orthonyx, 362.
  senilis, 362.
  squamiger, 360.
mesochrysus, Basileuterus, 553.
  Basileuterus rufifrons, 553.
mesomelas, Icterus, 633.
Mesopicus cecilii, 353.
  hæmatostigma, 353.
mesorhynchus, Ceophlœus, 356.
  Ceophlœus lineatus, 356.
mesura, Piaya cayana, 122, **321**.
Metallura tyrianthina, 305.
  tyrianthina tyrianthina, 305.
  williami, 305.
mexicana, Certhiola, 578.
  Cœreba chloropyga, 578.
  Urubitinga, 247.
mexicanus, Charadrius, 223.
  Himantopus, 223.
Michler, Lieutenant N., expedition to the Atrato River, 17.
michleri, Pittasoma, 17, 394.
Micrastur guerilla interstes, 241.
  interstes, 241.
Microbates cinereiventris cinereiventris, 379.
  cinereiventris magdalenæ, 279.
  cinereiventris torquatus, 379.
  collaris, 380.
Microcerculus marginatus marginatus, 528.
  marginatus occidentalis, 528.
  squamulatus antioquensis, 528.
  squamulatus corassus, 528.
  squamulatus squamulatus, 528.
  squamulatus tæniatus, 528.
microhyncha, Ornismya, 307.
microrhynchum, Ramphomicron, 307.
Micromonacha lanceolata, 118, 344; known distribution of, figured 118.

Micropogon bourcierii, 327.
micropterus, Agathopus, 361.
  Scytalopus, 361.
  Scytalopus micropterus, 361.
Microrhopias boucardi consobrina, 378.
  grisea hondæ, 376.
  grisea intermedia, 376.
microrhyncha, Cœreba cærulea, 586.
  Cyanerpes cærulea, 586.
microrhynchus, Cacicus uropygialis, 629.
  Cyanerpes cærulea, 586.
Micrositface souancei, 259.
Microtriccus brunneicapillus brunneicapillus, 452.
Migrants, North American, 183, 184.
militaris, Ara militaris, 257.
  Emberiza, 632.
  Leistes, 632.
  Psittacus, 257.
Miller, Charles, acknowledgement to, 9.
Miller, Leo E., work by, 9, 21, 30–49, 58, 60.
Miller, Waldron DeWitt, acknowledgement to, 11.
milleri, Grallaria, 396.
  Manacus vitellinus, 487.
Milvago chimachima, 239.
Milvulus tyrannus, 479.
Mimidæ, 529.
Mimus brasiliensis, 531.
  columbianus, 530.
  gilvus, 529.
  gilvus columbianus, 530.
  gilvus tolimensis, **529**, 530.
  melanopterus, 529, 530.
minimus, Pipra leucocilla, **480**.
  Tyranniscus chrysops, 454.
minlosi, Thryophilus, 512.
  Xenerpestes, 119.
minor, Catamenia homochroa, 559.
  Catamenia inornata, 559.
  Cissopis, 622.
  Cissopis leveriana, 622.
  Cnipodectes, 465.
  Electron platyrhynchus, **269**, 270.
  Grallaria, 397.
  Grallaria brevicauda, 397.
  Hylophilus, 541.
  Lophotriccus squamæcrista, 140.
minor, Lophotriccus squamæcristatus, 443.
  Myiodynastes chrysocephalus, 464.
  Pachysylvia, 541.
  Pipra leucocilla, 480.
  Pipra mentalis, 480.
  Platypsaris, 490.
  Prionirhynchus platyrhynchus, 269.
  Querula, 490.
  Sicalis arvensis, 566.
  Streptoprocne zonaris, 277.
  Sycalis, 566.
minuta, Euphonia, 590.
  Loxia, 557.
  Piaya, 322.
  Spermophila, 557.
  Sporophila, 557.
  Sporophila minuta, 557.
minutilla, Tringa, 224.
Mionectes oleaginus, 449.
  oleaginus parcus, 449.
  olivaceus, 448.
  olivaceus hederaceus, 448.
  olivaceus pallidus, 448.
  striaticollis, 448.
  striaticollis poliocephalus, 448.
Miraflores, 22.
mitchelli, Calliphlox, 311.
  Trochilus, 311.
Mitrephanes aurantiiventris, 472.
  berlepschi eminulus, 472.
  eminulus, 472.
Mitrospingus cassini, 617.
Mniotilta varia, 543.
Mniotiltidæ, 543.
Mockingbirds, 529.
mocoa, Cyanolesbia mocoa, 307, 308, **309**.
  Cynanthus, 309.
modesta, Grallaria, 398.
modestus, Crypturus, 192.
  Crypturus soui, 192.
mœsta, Synallaxis, 403.
  Synallaxis mœsta, 133, **403**.
mollissima, Chamæza, 392.
Molothrus atronitens, 631.
  bonariensis æquatorialis, 631.
  bonariensis atronitens, 631.
  bonariensis bonariensis, 631.
  bonariensis cabanisi, 631.

Molothrus bonariensis occidentalis, 631.
  cassini, 631.
  discolor, 631.
  (Lampropsar) cabanisii, 631.
  venezuelensis, 631.
Momotidæ, 267.
Momotus æquatorialis, 272.
  æquatorialis æquatorialis, 272.
  brasiliensis ignobilis, 271.
  conexus, 271.
  conexus reconditus, 271.
  martii, 267.
  momota ignobilis, 271.
  platyrhynchus, 268.
  semirufus, 267.
  subrufescens, 271.
  subrufescens conexus, 271.
  subrufescens reconditus, 271.
  subrufescens subrufescens, 271.
Monasa flavirostris, 344.
  morphœus morphœus, 344.
  morphœus peruana, **344**, 345.
  mystacalis, 342.
  nigrifrons, 345.
  pallescens, 345.
  pallescens pallescens, 345.
  peruana, 344.
  sclateri, 345.
montagni, Penelope, 161, **194**.
montagnii, Ortalida, 194.
montana, Columba, 213.
  Geotrygon, 213.
  Oreopeleia, 213.
montanus, Philydor montanus, 412.
monticola, Grallaria, 395.
  Stenopsis cayennensis, 275.
  Thermochalcis cayennensis, 275.
moorei, Phæthornis, 281.
  Phœthornis fraterculus, 281.
morphœus, Monasa morphœus, 344.
moschata, Anas, 233.
  Cairina, 233.
moschitus, Chrysolampis, 295.
mosquera, Trochilus, 302.
  Vestipedes, 302.
Motacilla æquinoctialis, 548.
  æstiva, 545.
  cayana, 583.
  chrysoptera, 543.
Motacilla citrea, 543.
  fusca, 545.
  noveboracensis, 547.
  ruticilla, 548.
  varia, 543.
Motacillidæ, 554.
Motmots, 267.
mulsanti, Acestrura, 311.
  Chætocercus, 311.
  Ornismya, 311.
multistriata, Siptornis flammulata, 407.
  Synallaxis, 407.
multistriatus, Thamnophilus, 368.
murallæ, Sporophila aurita, 558.
murina, Orochelidon, 504.
  Petrochelidon, 504.
Muscicapa barbata, 465.
  canadensis, 548.
  cayenensis, 460.
  cinnamomea 467.
  cinnamomeiventris, 429.
  fasciatus, 468.
  fulvicauda, 553.
  oleaginea, 449.
  olivacea, 539.
  pica, 431.
  purpurata, 500.
  pygmæa, 373.
  rubinus, 470.
  rufa, 491.
  simplex, 495.
  striata, 546.
  (Todirostrum) ruficeps, 442.
  tyrannulus, 474.
  tyrannus, 479.
  virens, 473.
Muscisaxicola alpina alpina, 432.
  alpina columbiana, 432.
  columbiana, 167.
Muscivora tyrannus, 131, **479**.
mustelinus, Crypturus soui, 193.
mycteria, Ciconia, 228.
  Jabiru, 228.
Myiadestes ralloides, 532.
  ralloides venezuelensis, 532.
  venezuelensis, 532.
Myiarchus apicalis, 476.
  cephalotes, 476.
  crinitus, 474.

Myiarchus erythrocercus, 475.
    ferox, 475.
    (ferox?) panamensis, 475.
    (ferox ?) venezuelensis, 475.
    fortirostris, 475.
    nigriceps, 477.
    panamensis, 475.
    phæocephalus, 476.
    tuberculifer nigriceps, 477.
    tuberculifer tuberculifer, 477.
Myiarchus tyrannulus, 475.
    tyrannulus tyrannulus, 474.
    venezuelensis, 475.
Myiobius atricaudus, 465.
    barbatus, 465.
    barbatus atricaudus, 465.
    barbatus barbatus, 465.
    bellus, 468.
    cinnamomeus, 467.
    cinnamomeus pyrrhopterus, 467.
    fasciatus fasciatus, 468.
    flavicans, 467.
    fulvigularis, 469.
    litæ, 468.
    nævius, 468.
    pulcher, 468.
    pulcher bellus, 468.
    pulcher pulcher, 468.
    pyrrhopterus, 467.
    stellatus, 469.
    sulphureipygius, 467.
    sulphureipygius aureatus, 465, **466**.
    sulphureipygius villosus, 467.
    villosus, **465**, 466, 467.
    xanthopygus aureatus, 466.
Myioborus chrysops, 29, **549**.
    ornatus, 549.
    verticalis verticalis, 548.
Myiochanes ardosiacus ardosiacus, 473.
    brachytarsus, 474.
    richardsoni, 474.
    richardsonii richardsonii, 474.
    virens, 473.
Myiodioctes coronatus, 552.
    tristriatus, 551.
Myiodynastes audax, 463.
    audax nobilis, 463.
    chrysocephalus, 464.
    chrysocephalus minor, 464.
Myiodynastes luteiventris, 463.
    maculatus nobilis, 463.
    nobilis, 463.
Myiopagis placens, 459.
    placens accola, 457.
    placens pallens, 459.
    subplacens, 458.
    viridicata accola, **457**, 458.
    viridicata implacens, 458, 459.
    viridicata pallens, 457, 458, **459**.
    viridicata viridicata, 458, 459.
Myiopatis pusilla, 452.
Myiothlypis luteoviridis, 550.
    nigrocristatus, 549.
Myiotriccus ornatus ornatus, 469.
    ornatus phœnicurus, 123.
    ornatus stellatus, 469.
    phœnicurus, 470.
Myiozetetes cayanensis cayanensis, 460.
    columbianus, 460.
    connivens, 461.
    granadensis, 461.
    guianensis, 460.
    similis columbianus, 460.
    similis connivens, 461.
    similis texensis, 461.
    texensis, 460.
    texensis colombianus, 460.
Myornis senilis, 360, **362**.
Myospiza aurifrons, 567.
    cherriei, 567.
    manimbe, 160, 567.
    manimbe columbiana, 567.
Myrmeciza berlepschi, 384.
    boucardi, 384, 385.
    boucardi panamensis, 385.
    exsul, 121, 383; known range of, figured, 121.
    immaculatus berlepschi, 384.
    immaculatus immaculatus, 384.
    immaculatus zeledoni, 384.
    læmosticta nigricauda, 385.
    longipes boucardi, 122, 126, **384**.
    longipes panamensis, 385.
    maculifer cassini, 383.
    maculifer maculifer, 382.
    melanoceps, 382.
    nigricauda, 385.
Myrmelastes cassini, 383.

Myrmelastes exsul, 383.
  exsul maculifer, 382.
  immaculatus, 52, 122.
  immaculatus immaculatus, 384.
Myrmoborus leucophrys leucophrys, 386.
  myiotherinus elegans, 387.
Myrmopagis axillaris albigula, 375.
  axillaris melæna, 374.
  cinereiventris pallida, 376.
  fulviventris, 374.
  hæmatonota, 374.
  ornata ornata, 374.
  schisticolor interior, 375.
  schisticolor schisticolor, 375.
Myrmotherula albigula, 375.
  fulviventris viduata, 374.
  melæna, 375.
  ornata, 374.
  pygmæa, 373.
  schisticolor schisticolor, 375.
  surinamensis, 373.
  surinamensis pacifica, 109, **373**.
  viduata, 374.
mystacalis, Malacoptila, **342**, 343.
  Monasa, 342.
  Pheugopedius mystacalis, **515**, 516.
  Thryothorus, 17, 515.

nævia, Ardea, 229.
  Tapera, 323.
nævioides, Conopophaga, 387.
  Hylophylax, 387.
  Hypocnemis, 387.
nævius, Cuculus, 323.
  Diplopteryx, 323.
  Myiobius, 468.
  Nycticorax nycticorax, 468.
  Thamnophilus, 366, 367.
nana, Chæmepelia passerina, 209.
  Dendrornis, 421.
  Grallaria, 400.
  Grallaricula, 400.
nanus, Xiphorhynchus nanus, 421.
napæa, Dacnis cayana, 584.
napæum, Camptostoma pusillum, 452.
  Ornithion, 452.
napensis, Chiroxiphia pareola, 484.
  Psophia, 227.
Nasica guttatoides, 419.
nationi, Aythya, 22.
nationi, Fuligula, 234
  Marila, 126, **234**.
nattereri, Cotinga, 12, 499.
  Rupornis magnirostris, 246.
natererii, Ampelis, 499.
  Cotinga, 499.
neglectus, Melanerpes sublegatus, 351.
  Ostinops alfredi, 150, **626**.
  Ostinops sincipitalis, 626.
  Troglodytes musculus, 518, 519, **520**, 521.
Nelson, E. W., acknowledgement to, 10.
Nemosia guirina, 617.
  rosenbergi, 617.
  verticalis, 622.
Neochelidon tibialis, 504.
Neocrex colombianus, 219.
  columbianus, 219.
  uniformis, 219.
Neomorphus salvini, 109, 323.
Nettion andium, 233.
New Forms Described, 181.
niger, Pachyrhamphus polychropterus, 492.
  Pachyrhynchus, 492.
  Platyurus, 359.
  Scytalopus, 161, 162, **359**, 360; range of, figured, 162.
Nightjars, 272.
nigra, Jacana, 226.
  Parra, 226.
  Rhynchops, 222.
nigricans, Cercomacra, 381.
  Pardirallus nigricans, 216.
  Rallus, 216.
  Sayornis, 472.
nigricapillus, Formicarius nigricapillus, 389.
  Nothocercus, 190.
  Thryophilus, 16, 17, 513, 514.
  Thryothorus, 513.
  Tyranniscus, 453.
  Tyranniscus nigricapillus, 453.
nigricauda, Automolus nigricauda, 411.
  Myrmeciza, 385.
  Myrmeciza læmosticta, 385.
  Spinus, 563, **564**.
nigriceps, Chlorospingus albi 618.
  Mecocerculus, 430.

nigriceps, Myiarchus, 477.
    Myiarchus tuberculifer, 477.
    Thamnophilus, 119, **365**; known range of, figured, 119.
    Todirostrum, 438.
nigricollis, Anthracothorax nigricollis, 295.
    Busarellus, 247.
    Buteogallus, 247.
    Falco, 247.
    Himantopus, 223.
    Trochilus, 295.
nigricrissa, Piaya cayana, **320**, 321.
    Pyrrhococcyx, 320.
nigricristatus, Basileuterus, 549.
nigrifrons, Bucco, 345.
    Chlorospingus, 621.
    Formicarius, 388.
    Formicarius colma, 388.
    Hemispingus superciliaris, 621.
    Monasa, 345.
nigrifumosa, Synallaxis, 404.
    Synallaxis pudica, 404.
nigrirostris, Andigena, 161, 331.
    Andigena nigrirostris, 331.
    Cyclarhis, 542.
    Pteroglossus, 331.
nigrivestris, Vestipedes, 301.
nigro-capillus, Tyrannulus, 453.
nigrocristatus, Myiothlypis, 549.
    Trichas, 549.
nigrofasciata, Thalurania, 292.
    Trochilus, 292.
nigrogularis, Colinus, 174.
    Ramphocelus, 609.
    Tanagra, 609.
nigrolineata, Ciccaba, 254.
nigroviridis, Calliste, 598.
    Tangara, 598.
    Tangara nigroviridis, 598.
nitida, Asturina, 243.
nitidissima, Chlorochrysa, 146, **592**.
nitidus, Falco, 243.
niveigularis, Tyrannus, 478.
noanamæ, Bucco, 341.
    Nystactes, 341.
nobilis, Chamæza, 391.
    Chamæza brevicauda, 391.
    Gallinago, 55, **225**.
nobilis, Myiodynastes, 463.
    Myiodynastes audax, 463.
    Myiodynastes maculatus, 463.
Nomenclature, 170.
Nomonyx dominicus, 235.
Nonnula frontalis, 344.
North American Migrants, 183, 184.
notabilis, Compsocoma, 606.
    Seiurus noveboracensis, 547.
    Siurus nævius, 547.
    Tanagra, 606.
Notharchus hyperrhynchus leucocrissus, 340.
    pectoralis, 340.
    tectus subtectus, 340.
Nothocercus bonapartei, 190.
    julius, 190.
noveboracensis, Henicocichla, 547.
    Motacilla, 547.
    Seiurus noveboracensis, 547.
Nóvita, explorations about, 38, 39.
nuchalis, Campylorhynchus, 511.
    Grallaria, 395.
    Heleodytes, 511.
    Heleodytes nuchalis, 511.
    Pteroglossus torquatus, 332.
Nyctalops stygius, 252.
Nyctibius longicaudatus, 272.
Nycticorax nycticorax nævius, 229.
Nyctidromus albicollis, 274.
    albicollis albicollis, 274.
    albicollis gilvus, 274.
    guianensis, 274.
Nyroca brunnea, 234.
Nystactes noanamæ, 341.
    tamatia, 341.
Nystalus radiatus, 341.

obscura, Grallaria rufula, 398.
    Synallaxis mœsta, 403.
obscurata, Lochmias, 401.
obscurior, Atlapetes pallidinuchus, 576.
    Sclerurus mexicanus, 415.
obscurus, Hylomanes momotula, 272.
ocellata, Xiphorhynchus, 422.
ocellatus, Antrostomus, 276.
occidentalis, Andigena nigrirostris, 331, **332**.
    Aratinga æruginosa, 257, 258.

occidentalis, Arremon aurantiirostris, 573, **574**.
  Chætura cinereiventris, 277, **278**.
  Chætura sclateri, 278.
  Eubucco bourcieri, 327.
  Euchlornis riefferi, 498.
  Leptotila verreauxi, 140, 211.
  Microcerculus marginatus, 528.
  Molothrus bonariensis, 631.
  Procnias, 587.
  Pyroderus, 176.
  Pyroderus scutatus, 177, **500**.
  Tangara aurulenta, 595.
  Tersina viridis, 587.
ochracea, Cerchneis sparveria, 251.
  Cerchneis sparverius, 251.
ochrocephala, Amazona ochrocephala, 262.
ochrocephalus, Psittacus, 262.
Ochthodiæta fumigata, 427.
Ochthœca albidiedema, 428.
  cinnamomeiventris, 429.
  citrinifrons, 428.
  frontalis, 428.
  fumicolor, 428.
  gratiosa gratiosa, 429.
  gratiosa jesupi, 430.
  keaysi, 422.
  lessoni, 429.
  œnanthoides brunneifrons, 428.
  œnanthoides fumicolor, 428.
  rufomarginata, 430.
Ochthornis littoralis, 431.
O'Connell, Geoffroy, work by, 9, 10, 50.
Ocreatus underwoodi underwoodi, 140, **303**.
Ocyalus wagleri, 623.
Odontophoridæ, 198.
Odontophorus baliolus, 200.
  guianensis marmoratus, 200.
  hyperythrus, 200.
  marmoratus, 200.
  parambæ, 200.
  strophium, 201.
Odontorchilus branicki, 511.
Odontorhynchus branickii, 511.
Œdicnemidæ, 226.
œnigma, Sapoyoa, 107; known range of, figured, 107.
Ognorhynchus icterotis, 29, **258**.
oleaginea, Muscicapa, 449.
  Pipromorpha oleaginea, 449.
oleagineus, Chlorospingus, 621.
  Hemispingus frontalis, 621.
oleaginus, Mionectes, 449.
olivacea, Chlorothraupis, 614.
  Muscicapa, 539.
  Vireosylva, 539.
olivaceiceps, Pœcilothraupis palpebrosa, 602.
olivaceus, Mionectes, 448.
  Orthogonys, 16, 614.
  Picumnus, 356.
  Picumnus olivaceus, **356**, 357, 358.
  Vireo, 539.
olivascens, Basileuterus auricapillus, 552.
  Basileuterus vermivorus, 552.
  Cinnicerthia, 508.
  Muscivora, 131.
  Saltator, 562.
olivater, Planesticus, 533.
olivinus, Veniliornis, 353.
omissa, Euphonia fulvicrissa, 590.
  Tanagra fulvicrissa, 590.
  Tiaris, 560.
  Tiaris bicolor, 560.
Onychorhynchus coronatus* castelnaudi, 464.
Opisthocomidæ, 216.
Opisthocomiformes, 216.
Opisthocomus hoazin, 216.
Opisthoprora euryptera, 307, 660.
Oporornis philadelphia, 546.
opthalmica, Sporophila, 558.
  Sporophila aurita, 558.
opthalmicus, Pogonotriccus, 446.
Orchilus atricapillus, 444.
orenocensis, Pyroderus, 176, 500.
  Pyroderus scutatus, 177.
Oreopeleia bourcieri, 214.
  erythropareia, 215.
  linearis linearis, 214, **215**.
  montana, 213.
  veraguensis, 214.
Oreothraupis arremonops, 622.
Oreotriccus plumbeiceps, 446.
Orinocan Fauna, 132.
Oriolus cela, 627.

Oriolus icterocephalus, 632.
  picus, 422.
  spurius, 633.
  xanthornus, 634.
ornata, Formicivora, 374.
  Myrmopagis ornata, 374.
  Myrmotherula, 374.
  Setophaga, 549.
  Tyrannula, 469.
ornatus, Cephalopterus, 501.
  Falco, 248.
  Myioborus, 549.
  Myiotriccus ornatus, 469.
  Spizaëtus, 248.
Ornismya bonapartei, 297.
  colombica, 293.
  delphinæ, 294.
  ensifera, 299.
  helianthea, 297.
  heliodor, 312.
  heteropogon, 306.
  juliæ, 290.
  microhyncha, 307.
  mulsanti, 311.
  poortmani, 291.
  temmincki, 299.
  torquata, 297.
Ornismya underwoodi, 303.
  vestita, 300.
Ornithion napæum, 452.
Orochelidon murina, 504.
Orodynastes striaticollis striaticollis, 427.
Oropezus rufula rufula, 397.
Ortalida goudotii, 197.
  montagnii, 194.
Ortalis columbiana caucæ, 196.
  columbiana columbiana, 122, **196.**
  garrula, 197.
  guttata, 197.
Orthogonys olivaceus, 16, 614.
orthonyx, Acropternis, 362.
  Acropternyx, 362.
  Merulaxis, 362.
ortoni, Penelope, 194.
Ortyx leucotis, 199.
  marmoratus, 200.
  (Odontophorus) strophium, 201.
  parvicristatus, 199.
oryzivora, Cassidix, 630.
Oryzoborus angolensis, 556.
  crassirostris crassirostris, 556.
  funereus, 556.
  funereus æthiops, 556.
Osculatia purpurata, 111, **213.**
  sapphirina, 111, 213; known range of, figured, 111.
oseryi, Phœthornis hispidus, 282.
  Trochilus, 282.
Ospreys, 238.
Ostinops alfredi alfredi, 626.
  alfredi neglectus, 150, **626.**
  alfredi sincipitalis, 150, **626.**
  angustifrons, 627.
  atrocastaneus, 625.
  cristatus, 624.
  decumanus, 25, 26, 106, 120, 280, **624**; range of, figured, 120.
  guatimozinus, 623.
  salmoni, 25, 146, **625.**
  sincipitalis, 55, 626.
  sincipitalis neglectus, 626.
Otocoris alpestris, 178.
  alpestris peregrina, 554.
  peregrina, 161, 164, **554.**
Otus choliba, 253.
  watsoni, 253.
Ovenbirds, 400.
Owls, 252.
Oxypogon guerini, 306.
  stubeli, 306.
Oystercatchers, 222.

Pachyrhamphus atricapillus, 493.
  castaneus, 491.
  castaneus intermedius, 492.
  castaneus saturatus, 492.
  cinereiventris, 493.
  cinnamomeus, 491.
  dorsalis, 126, **493.**
  homochrous, 490.
  magdalenæ, 491.
  niger, 492.
  polychropterus niger, 492.
  rufus, 491.
  sp., 491.
  versicolor, 490.
Pachyrhynchus semifasciatus, 488.
Pachysylvia flavipes flavipes, 540.

Pachysylvia minor, 541.
  semibrunnea, 540.
pacifica, Compsothlypis pitiayumi, 544.
  Myrmotherula surinamensis, 109, **373**.
  Parula pitiayumi, 544.
  Pyrrhura melanura, 259.
pacificus, Cacicus uropygialis, 629.
  Craspedoprion, 434.
  Cyanerpes cyaneus, 585.
pagana, Elainea, 455.
Palamedea cornuta, 232.
Palamedeidæ, 232.
Palamedeiformes, 232.
pallatangæ, Elænia, 456.
pallens, Galbula ruficauda, 336.
  Myiopagis placens, 459.
  Myiopagis viridicata, 457, 458, **459**.
pallescens, Monasa, 345.
  Monasa pallescens, 345.
palliatus, Caica melanocephala, 265.
  Leptodon, 250.
pallida, Diglossa cærulescens, 582.
  Galbula ruficauda, 336.
  Leptotila, 213.
  Myrmopagis cinereiventris, 376.
pallidigularis, Automolus, 410.
  Automolus pallidigularis, 410.
pallidinucha, Tanagra, 576.
pallidinuchus, Atlapetes pallidinuchus, 576.
pallidipectus, Leptotila rufaxilla, 133, **212**.
  Troglodytes solstitialis, 521.
pallidus, Mionectes olivaceus, 448.
  Pionites melanocephala, 265.
palmarum, Tanagra, 58, 608.
  Thraupis, 125; range of, figured, 125.
Palmer, Mervyn G., collections by, 18; work by, 6, 9, 18.
palmeri, Calospiza, 597.
  Tangara, 597.
palpebrosa, 602.
Panama, collections from, 6.
panamensis, Amazona ochrocephala, 263.
  Chrysotis, 263.
  Crax, 194.
  Crypturus soui, 192.
  Malacoptila panamensis, 343.
panamensis, Myiarchus, 475.
  Myiarchus (ferox ?), 475.
  Myrmeciza boucardi, 385.
  Myrmeciza longipes, 385.
  Piaya rutila, 322.
  Scytalopus, 153.
Panoplites flavescens, 300.
papa, Gypagus, 237.
  Vultur, 237.
papallactæ, Atlapetes pallidinuchus, 576.
Parabuteo unicinctus harrisi, 241.
paradoxus, Triptorhinus, 361.
parambæ, Attila, 495.
  Attila brasiliensis, 495.
  Odontophorus, 200.
Paramillo, exploration of the, 63.
paramillo, Vestipedes, **301**.
Paramo Zone, 166–169; Birds of the, 167.
parca, Pipromorpha oleaginea, 449.
parcus, Mionectes oleagineus, 449.
Pardirallus nigricans nigricans, 216.
pardus, Heleodytes, 511.
Paroaria gularis, 573.
Parra cayennensis, 222.
  chavaria, 232.
  hypomelæna, 226.
  melanopygia, 225.
  nigra, 226.
Parrakeets, 256.
Parridæ, 225, 660.
Parrots, 256.
Partridges, 198.
Parula pitiayumi, 544.
  pitiayumi pacifica, 544.
Parus erythrocephala, 479.
parvicristatus, Colinus cristatus, 199.
  Ortyx, 199.
parvirostris, Elainea, 456.
parvula, Chæmepelia passerina, 208.
  Heliodoxa leadbeateri, 296.
parvus, Cyclarhis flavipectus, **541**.
parzudaki, Tangara, 600.
parzudakii, Heliotrypha, 304.
Passeriformes, 359.
Passerina sphenura, 571.
passerina, Chamæpelia, 208.
  Columbigallina, 208.
passerini, Ramphocelus, 610.

paulus, Hapalocercus, 444.
pauxilla, Gallinula chloropus, 219.
pavoninus, Pharomachrus, 313.
    Trogon, 313.
pectoralis, Bucco, 340.
    Glyphorhynchus, 417.
    Glyphorhynchus cuneatus, 417.
    Habrura pectoralis, 445.
    Notharcus, 340.
Pelecaniformes, 236.
pelzelni, Pseudotriccus, 441.
    Pseudotriccus pelzelni, 441.
Penard, Thomas E., acknowledgement to, 10.
penduliger, Cephalopterus, 501.
Penelope aburri, 197.
    æquatorialis, 195.
    cristata, 161, **195**.
    guttata, 197.
    jacquacu, 196.
    montagni, 161, **194**.
    ortoni, 194.
    perspicax, 195.
peninsularis, Columba subvinacea, 205.
pennsylvanicus, Buteo, 243.
Peque, explorations about, 59.
peregrina, Helminthophila, 543.
    Otocoris alpestris, 161, 164, **554**.
    Otocorys, 554.
    Sylvia, 543.
    Vermivora, 543.
periopthalmica, Grallaria, 398.
    Hylopezus perspicillata, 398.
Peristera auriculata, 206.
    cinerea, 210.
perlata, Margarornis, 416.
    Strix, 256.
    Tyto, 256.
perlatus, Sittasomus, 416.
persicus, Cassicus, 627.
personata, Diglossa, 582.
    Tityra, 489.
    Trogon, 313.
personatus, Agrilorhinus, 582.
    Trogon, 314.
    Trogonurus, 161, 314.
perspicax, Penelope, 195.
perspicillata, Grallaria, 399.
    Hylopezus perspicillata, 399.
peruana, Hemithraupis, 617.
    Monasa morphœus, **344**, 345.
peruviana, Aglaia, 596.
    Brachyspiza capensis, 568.
    Hypocnemis cantator, 386.
    Pyrgita, 568.
    Rupicola, 140, 496.
    Rupicola peruviana, 496.
peruvianus, Hypocnemis, 386.
    Megaquiscalus macrourus, 635.
Petasophora anais, 295.
    cabanidis, 294.
    cyanotis, 294.
    delphinæ, 294.
    iolata, 295.
petax, Aulacorhamphus, 334.
Petrochelidon murina, 504.
    tibialis, 504.
Pezus yapura, 193.
Phænostictus macleannani macleannani, 388.
phæocephalus, Cyphorhinus, 16, 527.
    Leucolepis phæocephalus, 527.
    Myiarchus, 476.
phæochroa, Dendrocincla lafresnayei, 419.
    Dendrocincla, 419.
Phæolæma æquatorialis, 296.
phæolæmus, Aulacorhamphus, 334.
    Aulacorhynchus albivitta, **334**, 335.
Phæomyias murina incomta, 451.
phæopleurus, Catharus, 538.
Phæoprogne tapera immaculata, 502.
    tapera tapera, 503.
phæopygus, Planesticus, 533.
    Turdus, 533.
Phæthornis anthophilus, 282.
    columbianus, 282.
    griseogularis, 283.
    guyi emiliæ, 281.
    moorei, 281.
    striigularis, 283.
    striigularis subrufescens, **283**, 284.
    syrmatophorus syrmatophorus, 282.
    yaruqui, 281.
    yaruqui sancti-johannis, 281.
Phaëtusa chloropoda, 221.
Phætusa magnirostris, 222.
Phaiolaima rubinoides, 300.

Phaiolaima rubinoides æquatorialis, 296.
  rubinoides rubinoides, 296.
Phalacrocoracidæ, 236.
Phalacrocorax vigua, 236.
  vigua vigua, 236.
phalænoides, Glaucidium brasilianum, 255.
  Strix, 255.
Phalæopsis jardinii, 255.
Phalaropes, 222.
Pharomachrus antisiensis, 313.
  auriceps, 313.
  pavoninus, 313.
Phasianus garrulus, 197.
  hoazin, 216.
Pheucticus uropygialis, 555.
  uropygialis uropygialis, 555.
Pheugopedius fasciato-ventris fasciato-ventris, 515.
  hypospodius, 517.
  mystacalis amaurogaster, 516.
  mystacalis mystacalis, 515.
  mystacalis saltuensis, 515.
  rutilus, 517.
  sclateri, 517.
  spadix, 514.
philadelphia, Geothlypis, 546.
  Oporornis, 546.
  Sylvia, 546.
Philydor consobrinus, 411.
  montanus montanus, 412.
  montanus striaticollis, 412.
  pyrrhodes, 411.
  ruficaudatus, 411.
  rufipileatus consobrinus, 411.
  subfulvus, 411.
Phimosus berlepschi, 227.
Phlegopsis macleannani, 388.
Phœnicothraupis cristata, 614.
  gutturalis, 615.
  stolzmanni, 614.
phœnicotis, Calliste, 592.
  Chlorochrysa, 592.
phœnicura, Tyrannula, 470.
phœnicurus, Myiotriccus, 470.
  Myiotriccus ornatus, 123.
Phœnisoma ardens, 614.
phæocephalus, Myiarchus, 476.
Phœthornis anthophilus, 282.
Phœthornis columbianus, 282.
  fraterculus moorei, 281.
  griseogularis, 283.
  guyi emiliæ, 281.
  hispidus oseryi, 282.
  striigularis striigularis, **283**, 284.
  striigularis subrufescens, **283**, 284.
  syrmatophorus columbianus, 282.
  syrmatophorus syrmatophorus, 282.
  villosus, 282.
  yaruqui sancti-johannis, 281.
Phonasca humilis, 590.
  saturata, 590.
Phonipara bicolor, 560.
  pusilla, 560.
Phrygilus geospizopsis, 12.
  unicolor geospizopsis, 572.
  unicolor grandis, 572.
  unicolor unicolor, 572.
Phyllomyias griseiceps caucæ, 451.
  griseiceps griseiceps, **450**, 451.
Piaya cayana, 319, 320.
  cayana caucæ, 320.
  cayana columbiana, **319**, 321.
  cayana mehleri, 319.
  cayana mesura, 122, **321**.
  cayana nigricrissa, **320**, 321.
  minuta, 322.
  rutila gracilis, 322.
  rutila panamensis, 322.
  rutila rutila, 322.
pica, Fluvicola, 431.
  Muscicapa, 431.
picea, Pyriglena, 381.
Picidæ, 345.
Piciformes, 336.
picirostris, Dendrocolaptes, 422.
  Dendroplex, 422.
  Dendroplex picus, 422.
Picolaptes albolineatus, 423.
  lineaticeps, 423.
  lacrymiger, 423.
  lacrymiger lacrymiger, 423.
  lacrymiger sanctæ-martæ, 423.
  warscewiczi, 423.
Piculets, 345.
Picumnus canus, 358.
  cinnamomeus, 131, **356**.
  granadensis, 357, 358.

Picumnus granadensis antioquensis, 357, 358.
    granadensis granadensis, 358.
    olivaceus, 356.
    olivaceus flavotinctus, 357.
    olivaceus granadensis, 357, 358.
    olivaceus harterti, **357**, 358.
    olivaceus olivaceus, **356**, 357, 358.
    squamulatus, 356.
    squamulatus squamulatus, 356.
Picus cruentatus, 350.
    fumigatus, 351.
    guttatus, 348.
    melanoleucus, 355.
    pollens, 355.
Picus rivolii, 345.
    rubricollis, 354.
picus, Dendroplex picus, 422.
    Oriolus, 422.
Pigeons, 201.
pilaris, Atalotriccus pilaris, 126, **444**.
    Colopterus, 444.
pileata, Ardea, 230.
    Euphonia aurea, 588.
    Pionopsitta, 265.
    Tanagra aurea, 588.
    Zonotrichia, 568.
pileatus, Crypturus, 191.
    Cyanocorax, 636.
    Pilherodias, 230.
    Pilherodias pileatus, 230.
Pionias gerontodes, 263.
Pionites melanocephala pallidus, 265.
Pionopsitta fuertesi, 264.
    pileata, 265.
    pulchra, 264.
Pionus chalcopterus, 264.
    menstruus, 263.
    seniloides gerontodes, 263.
    seniloides seniloides, 263.
Pipile cumanensis, 197.
Pipilopsis cristata, 617.
    flavigularis, 619.
pipiri, Tyrannus, 478.
Pipits, 554.
Pipra auricapilla, 479.
    chrysoptera, 483.
    coracina, 481.
    coronata, 482.
Pipra coronata velutina, 481.
    cyaneocapilla, 481.
    cyanocephala, 588.
    deliciosa, 482.
    erythrocephala berlepschi, 480.
    erythrocephala erythrocephala, 479.
    filicauda, 482.
    flavicapilla, 483.
    flavogaster, 455.
    isadorei, 481.
    isadorei isadorei, 481.
    leucocephala, 431.
    leucocilla anthracina, 480.
    leucocilla coracina, 481.
    leucocilla leucocilla, 481.
    leucocilla **minimus**, **480**.
    leucocilla minor, 480.
    leucorrhoa, 484.
Pipra mentalis minor, 480.
    striolata, 482.
    velutina, 481.
    vitellina, 487.
Pipreola jucunda, 499.
    lubomirskii, 499.
    riefferi, 498.
Pipridæ, 479.
Pipridea melanonota venezuelensis, 592.
    venezuelensis, 592.
Piprites tschudi, 483.
Pipromorpha oleaginea oleaginea, 449.
    oleaginea parca, 449.
Piranga leucoptera ardens, 614.
    rubra, 613.
    rubra rubra, 613.
    rubriceps, 614.
    testacea faceta, 613.
    testacea testacea, 613.
pirrensis, Capito maculicoronatus, 114, **324**, 325.
Pisobia maculata, 224.
pitangua, Lanius, 464.
    Megarhynchus, 464.
Pitangus derbianus rufipennis, 462.
    lictor, 463.
    rufipennis, 462.
    sulphuratus caucensis, 462.
    sulphuratus rufipennis, 462.
    sulphuratus sulphuratus, 462.
Pithys bicolor, 382.

Pithys bicolor æquatorialis, 381.
  leucophrys, 386.
pitiayumi, Parula, 544.
Pittasoma **harterti**, **392**.
  michleri, 17, 394.
  rosenbergi, 392.
  rufopileatum, 392, 393, 394.
pittieri, Henicorhina prostheleuca, 523, 525.
Pitylus grossus, 561.
placens, Myiopagis, 459.
Placostomus coronatus, 433.
Planesticus albiventer ephippialis, 126, **536**.
  atrosericeus, 533.
  caucæ, 533.
  fuscobrunneus, 533.
  gigas, 56.
  gymnophthalmus, 534.
  ignobilis, 56.
  ignobilis debilis, 535.
  ignobilis goodfellowi, 535.
  ignobilis ignobilis, 534.
  leucops, 533.
  obsoletus columbianus, 536.
  olivater, 533.
  phæopygus, 533.
  serrana, 533.
  serranus, 532.
  tristis cnephosa, 534.
  tristis daguæ, 534.
Platalea ajaja, 228.
Plataleidæ, 228.
Platypsaris homochrous homochrous, 490.
  minor, 490.
platypterus, Buteo, 243.
  Sparvius, 243.
Platyrhynchus albogularis, 433.
  coronatus, 433.
  flavigularis, 433.
  virescens, 473.
platyrhynchus, Crypticus, 268.
  Electron, 270.
  Electron platyrhynchus, **268**, 269, 270.
  Momotus, 268.
  Prionirhynchus, 269.
Platytriccus albogularis, 433.
Platytriccus flavigularis, 433.
  mystaceus albogularis, 433.
Platyurus niger, 359.
Plegadis autumnalis, 175.
Plotus anhinga, 237.
Plovers, 222.
plumbea, Columba, 203.
  Ictinia, 250.
  Leucopternis, 247.
  Urubitinga, 247.
plumbeiceps, Leptoptila, 212.
  Leptotila, 126, **212**.
  Oreotriccus, 446.
  Pogonotriccus, 446.
  Polioptila, 507.
  Polioptila livida, 507.
plumbeus, Falco, 250.
pluricinctus, Pteroglossus, 332.
Plush-capped Finches, 554.
podiceps, Colymbus, 221.
  Podilymbus, 221.
Podicipedidæ, 221.
Podicipediformes, 221.
Podilymbus podiceps, 221.
pœcilocerca, Serpophaga, 431.
pœcilocercus, Mecocerculus, 431.
Pœcilothraupis lunulata, 602.
  lunulata lunulata, 602.
  palpebrosa, 602.
  palpebrosa olivaceiceps, 602.
  palpebrosa palpebrosa, 602.
pœcilotis, Leptopogon, 446.
  Pogonotriccus, 446.
Pœcilotriccus ruficeps ruficeps, 439.
  ruficeps rufigene, 439.
pœcilurus, Empidochanes, 471.
Pogonotriccus alleni, 446.
  opthalmicus, 446.
  plumbeiceps, 446.
  pœcilotis, 446.
  zeledoni, 451.
poliocephalus, Leptopogon, 449.
  Leptopogon superciliaris, 449.
  Mionectes striaticollis, 448.
poliopis, Malacoptila, 343.
  Malacoptila panamensis, 343.
Polioptila livida daguæ, 507.
  livida plumbeiceps, 507.
  plumbeiceps, 507.

Polioptila schistaceigula, 507.
pollens, Campephilus, 355.
  Picus, 355.
Polyborus cheriway, 238.
  chimachima, 239.
Polyerata amabilis, 286.
  rosenbergi, 287.
Polyxemus bombus, 312.
poortmani, Chlorostilbon poortmani, 291.
  Ornismya, 291.
Popayan Region, explorations in the, 30, 31, 32.
Popelairia conversi, 312.
  conversi æquatorialis, 312.
Porphyrio martinica, 220.
Porphyriops melanops bogotensis, 161, 164, **219**.
  melanops melanops, 161, 219.
porphyrocephala, Iridosornis, 602.
Porzana ænops, 218.
  albigularis, 218.
  carolina, 218.
  castaneiceps, 217.
  flaviventris, 218.
  hauxwelli, 218.
Premnoplex brunnescens brunnescens, 416.
  brunnescens coloratus, 417.
Premnornis guttata, 416.
Presbys bogotensis, 508.
pretiosa, Claravis, 210.
pretrei, Chlorophonia, 587.
  Tanagra, 587.
pretrii, Chlorophonia, 587.
princeps, Grallaria guatimalensis, 394.
Prionirhynchus platyrhynchus, 269.
  platyrhynchus minor, 269.
Prionites martii, 267.
Procnias occidentalis, 587.
  tersa, 587.
  viridis, 587.
Procnopis vassori, 592.
procurvoides, Campylorhamphus trochilirostris, 424.
  Xiphorhynchus, 424.
Progne dominicensis, 502.
  chalybea, 502.
  chalybea chalybea, 502.
  chalybeia, 502.
Progne leucogastra, 502.
promeropirhynchus, Dendrocolaptes, 422.
  Xiphocolaptes, 422.
propinqua, Columba plumbea, 203.
prostheleuca, Henicorhina prostheleuca, 523.
Protonotaria citrea, 543.
Psalidoprymna gouldi gouldi, 310.
  victoriæ victoriæ, 310.
Pseudochloris browni, 571, 572.
  citrina **antioquiæ**, **571**.
  citrina citrina, 571.
Pseudocolaptes boissonneauti, 408.
  boissonneauti boissonneauti, 408.
Pseudomyiobius annectens, 441.
Pseudospingus verticalis, 622.
Pseudotriccus annectens, 441.
  pelzelni, 441.
  pelzelni berlepschi, 441.
  pelzelni pelzelni, 441.
Psittacidæ, 256.
Psittaciformes, 256.
Psittacula conspicillata, 260.
  conspicillata caucæ, 260.
  conspicillata conspicillata, 122, **260**.
  cyanoptera, 261.
  exquisita, 261.
  pyrilia, 265.
  sclateri, 261.
  spengeli, 131, **261**.
Psittacus æruginosus, 257.
  amazoninus, 262, 264, 265.
  ararauna, 256.
  caica, 265.
  chalcopterus, 264.
  jugularis, 261.
  macao, 256.
  menstruus, 263.
  mercenarius, 262.
  militaris, 257.
  ochrocephalus, 262.
  seniloides, 263.
  severus, 257.
Psittospiza riefferi, 29.
  riefferi riefferi, 622.
Psophia napensis, 227.
Psophiidæ, 227.
Pteroglossus albivitta, 334.

Pteroglossus castanotis, 332.
    castanotis castanotis, 332.
    erythropygius, 333.
    erythropygius sanguineus, 333.
    flavirostris, 333.
    flavirostris flavirostris, 333.
    hæmatopygius, 335.
    humboldti, 333.
    hypoglaucus, 330.
    nigrirostris, 331.
    pluricinctus, 332.
    reinwardti, 334.
    sanguineus, 333.
    torquatus, 332.
    torquatus nuchalis, 332.
Pterophanes temmincki, 299.
pucherani, Campylorhamphus, 426.
    Melanerpes pucherani, 351.
    Xiphorhynchus, 426.
    Zebrapicus, 351.
pudica, Elænia frantzi, 457.
    Elænia pudica, 457.
    Elainia, 457.
    Synallaxis, 404.
    Synallaxis pudica, 404.
Puerto Berrio, explorations about, 61.
Puerto Valdivia, explorations about, 62.
Puffbirds, 339.
pulchellus, Hypolophus, 367.
    Thamnophilus, 367.
    Thamnophilus canadensis, 367.
pulcher, Myiobius, 468.
    Myiobius pulcher, 468.
pulchra, Eucinetus, **264**, 265.
    Pionopsitta, 264.
pumilus, Chlorostilbon, 281, 290.
punctatus, Lanius, 366.
    Thamnophilus punctatus, 366.
puncticeps, Dysithamnus, 372.
    Dysithamnus puncticeps, 372.
punctigula, Chrysoptilus, 350.
punctipectus, Chrysoptilus punctigula, **349**, 350.
purpurascens, Euphonia fulvicrissa, 590.
    Tanagra fulvicrissa, 590.
purpurata, Muscicapa, 500.
    Osculatia, 111, **213**.
    Querula, 500.
purus, Manacus manacus, 112.
purusianus, Galbalcyrhynchus, 339.
pusilla Myiopatis, 452.
    Phonipara, 560.
    Tiaris, 560.
    Tiaris olivacea, 560.
pusillum, Camptostoma pusillum, 452.
pusillus, Campylorhamphus, **425**, 426.
    Xiphorhynchus, 425.
pygmæa, Muscicapa, 373.
    Myrmotherula, 373.
Pygmornis striigularis, 283.
Pygochelidon cyanoleuca, 505.
Pyranga æstiva, 613.
    ardens, 614.
    rubra, 613.
    rubriceps, 614.
    testacea, 613.
Pyrgita peruviana, 568.
Pyriglena berlepschi, 381.
    picea, 381.
    tyrannina, 380.
Pyrilia, 265.
    pyrilia, 265.
pyrilia, Caica, 265.
    Pyrilia, 265.
Pyrocephalus pyrocephalus rubinus, 470.
    rubineus, 470.
    rubineus heterurus, 470.
    rubinus, 470.
    rubinus heterurus, 131, **470**.
    rubinus saturatus, 471
Pyroderus granadensis, 176, 500.
    masoni, 176.
    occidentalis, 176.
    orénocensis, 176, 500.
    scutatus, 176, 177; known distribution of races of, 177.
    scutatus granadensis, 140, 177, **400**.
    scutatus masoni, 177.
    scutatus occidentalis, 177, **500**.
    scutatus orenocensis, 177.
    scutatus scutatus, 140, 177.
pyrohypogaster, Cassicus, 635.
    Hypopyrrhus, 28, **635**.
Pyrrhococcyx columbianus, 319.
    mesurus, 321.
    nigricrissa, 320.
pyrrhodes, Anabates, 411.
    Philydor, 411.

pyrrhogaster, Hypopyrrhus, 635.
pyrrholæmus, Electron platyrhynchus, **269**, 270.
pyrrhops, Hapalopsittaca, 265.
pyrrhopterus, Myiobius, 467.
    Myiobius cinnamomeus, 467.
Pyrrhura berlepschi, 259.
    calliptera, 259.
    melanura melanura, 259.
    melanura pacifica, 259.
    souancei, 259.

Quails, 198.
Querquedula andium, 233.
    cyanoptera, 234.
    discors, 233.
Querula cruentata, 500.
    fusco-cinerea, 494.
    minor, 490.
    purpurata, 500.
Quetame, explorations about, 56.
quindiana, Siptornis flammulata, 407.
Quindio Pass, reconnaissance, over the, 26.
Quindio River, The, 28.
Quindio Trail, explorations along the, 32; reconnaissance over the, 26.
Quindio Valley, The, 28.
quindiuna, Cyanocitta armillata, 639.
    Cyanolyca armillata, 639.
quinticolor, Capito, 326.
Quiscalus assimilis, 635.
    macrourus, 635.
    major major, 635.
    subalaris, 635.
quitensis, Tanagra xanthogastra, 589.
quixensis, Formicivora, 378.

radiatus, Bucco, 341.
    Nystalus, 341.
radiolatus, Dendrocolaptes, 427.
    Dendrocolaptes sancti-thomæ, 427.
Rails, 216.
Rainfall, 81; at certain stations on the Pacific R. R., 83; at Bogotá, 53; at La Manuelita, 83; in the Cauca Valley, 25; on the Pacific slope, 22; at Pato Mines, on the Rio Neche, 82.
Rallidæ, 216.
Ralliformes, 216.
ralloides, Myiadestes, 532.
Rallus carolinus, 218.
    flaviventer, 218.
    nigricans, 216.
    semiplumbeus, 164, **216**.
ramoniana, Trogon, 317.
ramonianus, Chrysotrogon, 317.
Ramphastidæ, 328.
ramphastinus, Semnornis, 327.
    Tetragonus, 327.
Ramphastos abbreviatus, 329.
    ambiguus abbreviatus, 328, **329**.
    ambiguus ambiguus, **328**, 329.
    brevicarinatus, 328.
    citreolæmus, 330.
    culminatus, 330.
    cuvieri, 330.
    inca, 330.
    piscivorus brevicarinatus, 328.
    swainsoni, 328.
    tocard, 328.
    tocardus, 328.
Ramphocænus cinereiventris, 379.
    cinereiventris cinereiventris, 379.
    collaris, 380.
    melanurus trinitatis, 379.
    rufiventris, 379.
    rufiventris griseodorsalis, 379.
    rufiventris rufiventris, 379.
    trinitatis, 379.
Ramphocelus carbo carbo, 609.
    carbo unicolor, 610.
    chrysonotus, 187, **610**.
    dimidiatus, 609.
    dimidiatus dimidiatus, 609.
    flammigerus, 187, **610**, 611.
    icteronotus, 187, **612**.
    nigrogularis, 609.
    passerini, 610.
    unicolor, 610.
Ramphomicron heteropogon, 306, 307.
    microrhynchum, 307.
Ramphopis flammigerus, 610.
reconditus, Momotus conexus, 271.
    Momotus subrufescens, 271.
References, 185.
reguloides, Tyrannulus, 453.
    Tyrannulus elatus, 453.

regulus, Grallaria, 395.
reinwardti, Pteroglossus, 334.
  Selinidera, 334.
Remarks on the Distribution of Forests, 72.
Rhamphocelus jacapa, 610.
Rhodinocichla rosea rosea, 431.
Rhopoctites alogus, 412.
Rhopoterpe torquata torquata, 388.
Rhynchocyclus cinereiceps flavotectus, 436.
  flaviventris, 437.
  flaviventris aurulentus, 437.
  fulvipectus 434.
  klagesi, 437.
  marginatus, 434, 436.
  marginatus marginatus, 436.
Rhynchocyclus sulphurescens, 435.
  sulphurescens asemus, 434.
  sulphurescens assimilis, 435.
  sulphurescens exortivus, 435.
  sulphurescens flavo-olivaceus, 434, 436.
  viridiceps, 436.
Rhynchops cinerascens, 222.
  nigra, 222.
  nigra cinerascens, 222.
Rhynchortyx cinctus australis, 202.
Rhyncophilus solitarius, 223.
Ricaurte, explorations about, 50.
Rice, Dr. Hamilton, acknowledgement to, 9; publications by, 73.
Richardson, William B., work by, 6, 9, 21, 30–32, 49, 110.
richardsoni, Basileuterus, 550.
  Eubucco richardsoni, 327.
  Myiochanes, 474.
  Tyrannula, 474.
richardsonii, Myiochanes richardsonii, 474.
Richmond, Dr. Charles W., acknowledgement to, 10.
richmondi, Arremonops chrysoma, 569, 570.
  Arremonops conirostris, 113.
Ridgway, Robert, publications by, 186.
riefferi, Amazilia, 288, 289.
  Ampelis, 498.
  Euchlornis riefferi, 498.
riefferi, Pipreola, 498.
  Psittospiza, 29.
  Psittospiza riefferi, 622.
  Tanagra, 622.
riefferii, Psittospiza riefferii, 622.
Ring, Thomas M., work by, 9, 10, 50.
Rio Frio, explorations at, 33.
Rio Toché, explorations on the, 29, 35.
Riparia riparia, 501.
riparia, Hirundo, 501.
  Riparia, 501.
rivolii, Hypoxanthus, 346.
  Hypoxanthus rivolii, 345.
  Picus, 345.
rixosus, Machetornis, 432.
Robinson, Wirt, on the Magdalena River, 15.
robinsoni, Zenaida ruficauda, **207**, 208.
Rockwood, Frederick L., acknowledgement to, 9.
rosarius, Furnarius, 531.
rosea, Rhodinocichla rosea, 531.
Rosenberg, W. F., work by, 17.
rosenbergi, Antrostomus, 276.
  Caprimulgus, 275.
  Heteropelma, 487.
  Lipaugus holerythrus, 495.
  Nemosia, 617.
  Pittasoma, 392.
  Polyerata, 287.
  Scotothorus turdinus, 487.
rostrata, Dendrornis lachrymosa, 420.
  Urosticte benjamini, 303.
rostratus, Xiphorhynchus lacrymosus, 420.
Rostrhamus sociabilis, 249.
rothschildi, Buthraupis, 604.
rubiginosus, Chloronerpes, 347.
rubineus, Pyrocephalus, 470.
rubinoides, Phaiolaima, 300.
  Phaiolaima rubinoides, 296.
  Trochilus, 296.
rubinus, Muscicapa, 470.
  Pyrocephalus, 470.
  Pyrocephalus pyrocephalus, 470.
rubra, Fringilla, 613.
  Piranga, 613.
  Piranga rubra, 613.
  Pyranga, 613.

rubricapillus, Centurus, 351.
  Melanerpes rubricapillus, 351.
rubriceps, Piranga, 614.
  Pyranga, 614.
rubricollis, Campephilus, 354.
  Picus, 354.
rubricristata, Ampelis, 499.
rubrilateralis, Capito maculicoronatus, 114, **324**, 325.
rubripileus, Chloronerpes rubiginosus, 348.
rubrirostris, Arremon, 620.
  Chlorospingus, 620.
  Hemispingus, 620.
rubrocristata, Heliochera, 499.
rucheri, Threnetes, 279.
rufa, Muscicapa, 491.
  Tangara, 615.
rufaxilla, Ampelis, 500.
  Heliochera, 500.
  Leptotila, 213.
  Leptotila rufaxilla, 211.
ruficapilla, Calliste, 596.
  Grallaria, 53, 397.
  Grallaria ruficapilla, 397.
ruficauda, Asturina, 244.
  Galbula, 126, 336.
  Galbula ruficauda, 126, 336.
  Rupornis magnirostris, 244.
  Zenaida, 207.
  Zenaida ruficauda, 161, **207**, 208.
ruficaudatus, Anabates, 411.
  Philydor, 411.
ruficeps, Cænotriccus, 441.
  Cænotriccus ruficeps, 442.
  Grallaria, 31, 56, **395**.
  Muscicapa (Todirostrum), 442.
  Pœcilotriccus ruficeps, 439.
  Tinamus, 187.
  Tinamus major, **187**, 188, 190.
  Todirostrum, 439.
ruficervix, Calliste, 599.
  Stenopsis, 275.
  Tanagra, 599.
  Tangara ruficervix, 599.
  Thermochalcis, 275.
ruficollis, Bucco, 341.
  Capito, 341.
  Hirundo, 505.
ruficollis, Hypnelus ruficollis, 341.
  Stelgidopteryx, 505.
rufigene, Pœcilotriccus ruficeps, 439.
  Todirostrum, 439.
rufigula, Calospiza, 594.
  Tanagrella, 594.
  Tangara, 594.
rufigularis, Falco, 250.
  Hypotriorchis, 250.
rufina, Chlorœnas, 201.
  Columba, 26, **202**.
rufipectus, Formicarius, 147, 155.
  Formicarius rufipectus, 390.
  Synallaxis gularis, 406.
rufipennis, Chæmepelia rufipennis, 209.
  Chamæpelia, 209.
  Columbigallina, 209.
  Pitangus, 462.
  Pitangus derbianus, 462.
  Pitangus sulphuratus, 462.
  Saurophagus, 462.
  Talpacotia, 209.
rufiventris, Cercomacra tyrannina, 380.
  Lurocalis, 273.
  Ramphocænus, 379.
  Ramphocænus rufiventris, 379.
rufobrunneus, Thripadectes, 413.
rufocinerea, Grallaria, 395.
rufomarginata, Ochthœca, 430.
rufopileatum, Pittasoma, 392, 393, 394.
rufula, Grallaria, 398.
  Oropezus rufula, 398.
rufum, Conirostrum, 583.
rufus, Pachyrhamphus, 491.
  Tachyphonus, 615.
Rupicola peruviana, 140, 496.
  peruviana aurea, 137, 315, **496**.
  peruviana peruviana, 496.
  peruviana sanguinolenta, 137, 215, **497**; distribution of, figured, 137.
  rupicola, 140.
  sanguinolenta, 496, 497.
rupicola, Rupicola, 140.
Rupornis magnirostris, 243.
  magnirostris magnirostris, 243.
  magnirostris nattereri, 246.
  magnirostris ruficauda, 244.
ruticilla, Motacilla, 548.
  Setophaga, 548.

rutila, Piaya rutila, 322.
rutilus, Cuculus, 322.
  Pheugopedius, 517.
  Xenops, 414.

Salento, explorations about, 34.
Salmon, T. K., collections in Antioquia by, 16.
salmoni, Dacnis, 617.
  Erythrothlypis, 617.
  Hemithraupis, 617.
  Ostinops, 25, 146, 625.
  Tigrisoma, 231.
Saltator albicollis, 563.
  arremonops, 622.
  atripennis, 562.
  atripennis atripennis, 562.
  atripennis caniceps, 562.
  azaræ, 563.
  cærulescens azaræ, 563.
  maximus, 126, **561**.
  olivascens, 131, 562.
  striatipectus, 563.
  striatipectus striatipectus, 563.
  superciliaris, 563.
Saltators, 555.
saltuensis, Pheugopedius mystacalis, 515.
Salvin, Osbert, and F. Godman, publications by, 19.
Salvin, Osbert and Philip Lutley Sclater, publications by, 16, 170.
salvini, Amazona, 263.
  Capito, 327.
  Capito bourcieri, 327.
  Crypturus, 193.
  Crypturus variegatus, 193.
  Cyphorhinus, 527.
  Eubucco bourcieri, 327.
  Eutoxeres, 284.
  Eutoxeres aquila, 284.
  Icterus mesomelas, 633.
  Leucolepis, 527.
  Neomorphus, 109, **323**.
  Xanthornus mesomelas, 633.
San Agustin, explorations about, 40.
San Antonio, explorations at, 24.
sanctæ-martæ, Gymnocichla nudiceps, 385.
  Melanerpes wagleri, 351.
sanctæ-martæ, Picolaptes lacrymiger, 423.
sancti-johannis, Phœthornis yaruqui, 281.
sanctithomæ, Dendrocolaptes, 426.
  Dendrocolaptes sancti-thomæ, 426.
sancti-thomæ, Dendrocops, 426.
sanguineus, Pteroglossus, 333.
  Pteroglossus erythropygius, 333.
sanguinolenta, Rupicola, 496, **497**.
  Rupicola peruviana, 137, 215, **497**; distribution of, figured, 137.
sanguinolentus, Veniliornis oleaginus, 352.
San Juan River, explorations on the, 32.
Santa Elena, explorations at, 58, 61.
Santa Isabel, explorations at, 36.
Santa Marta, collections from, 6, 7.
Santos, General Rafael, acknowledgement to, 9.
Sapayoa ænigma, 107, **488**; known range of, figured, 107.
sapphirina, Osculatia, 111, 213; known range of, figured, 111.
Sarcoramphus gryphus, 237.
satrapa, Laphyctes, 478.
  Tyrannus melancholicus, **478**, 479.
saturata, Phonasca, 590.
  Tanagra, 126, **590**.
saturatus, Automolus nigricauda, 410.
  Formicarius, 390.
  Formicarius analis, 122, **389**, **390**.
  Pachyrhamphus castaneus, 492.
  Pyrocephala rubinus, 471.
Saucerottea saucerotti, 288.
saucerottei, Saucerottia, 288.
  Trochilus, 288.
saucerotti, Saucerottea, 288.
Saucerottia saucerottei, 288.
  viridigaster, 288.
saül, Lafresnayea saül, 299.
  Trochilus, 299.
Saurophagus lictor, 463.
  rufipennis, 462.
Sayornis ardosiacus, 472.
  cineracea, 472.
  nigricans, 472.
  nigricans cineracea, 472.
scalaris, Dryobates, 174.
Scansores, 324.

Scharf, Robert Francis, publications by, 110.
schistacea, Asturina, 247.
Urubitinga, 247.
schistaceifrons, Catamenia analis, 161.
Catamenia analoides, 560.
schistaceigula, Polioptila, 507.
schistaceus, Atlapetes, 29, **576**.
Tanagra, 576.
Schistes albogularis, 310.
geoffroyi, 310.
schisticolor, Formicivora, 375.
Myrmotherula schisticolor, 375.
schistochlamys, Accipiter bicolor, 242.
atra, 123, 136, **623**.
Schizœaca fuliginosa, 402.
griseo-murina, 402.
schliehpackei, Ensifera ensifera, 299.
schotti, Thryophilus nigricapillus, 140, **513**, 514.
schottii, Thryothorus, 513.
schrankii, Tanagra, 593.
Tangara, 593.
Sclater, Philip Lutley, publications by, 11, 12; see Salvin, Osbert.
sclateri, Cercomacra, 380.
Chætura, 277.
Chætura cinereiventris, 277.
Cyanocorax, 636.
Hirundinea, 464.
Monasa, 345.
Monasa pallescens, 345.
Pheugopedius, 517.
Psittacula, 595.
Tangara, 595.
Thripadectes virgaticeps, 412.
Thryothorus, 517.
Todirostrum, 438.
Sclerurus albigularis, 415.
albigularis albigularis, 415.
brunneus, 415.
caudacutus, 415.
mexicanus andinus, 415.
mexicanus obscurior, 415.
Scolopax brasilianus, 253.
braziliensis, 225.
caudatus, 227.
delicata, 224.
flavipes, 223.
Scolopax melanoleuca, 223.
Scops usta, 253.
Scotothorus turdinus rosenbergi, 487.
turdinus stenorhynchus, 488.
Screamers, 232.
scutatus, Pyroderus, 176, 177; known distribution of races of, 177.
Pyroderus scutatus, 177.
Scytalopus analis, 361.
canus, 361.
cinereicollis, 359.
erythropterus, 360.
griseicollis, 359, **360**, 361.
infasciatus, 361.
magellanicus, 359.
micropterus, 361.
micropterus micropterus, 361.
niger, 161, 162, **359**, 360; range of, figured, 162.
panamensis, 153.
sylvestris, 360.
unicolor, 359.
Seiurus noveboracensis, 547.
noveboracensis notabilis, 547.
noveboracensis noveboracensis, 547.
Selinidera reinwardti, 334.
spectabilis, 334.
semibrunnea, Pachysylvia, 540.
semibrunneus, Hylophilus, 540.
semicervinus, Basileuterus, 553.
Basileuterus fulvicauda, 553.
semicinereus, Dysithamnus, 370, 371.
Dysithamnus semicinereus, 370.
semifasciata, Tityra, 488, 489.
Tityra semifasciata, 488.
semifasciatus, Pachyrhynchus, 488.
semiflava, Geothlypis, 547.
semifuscus, Chlorospingus, 620.
Semimerula gigas, 53.
gigas gigantodes, 29, **537**.
gigas gigas, 136, **536**.
semipagana, Elænia flavogaster, 455.
semipalmata, Ægialitis, 223.
semipalmatus, Charadrius, 223.
semiplumbea, Leucopternis, 247.
semiplumbeus, Rallus, 164, **216**.
semirufa, Urospatha martii, 267.
semirufus, Atlapetes, 577.
Momotus, 267.

semirufus, Tanagra, 577.
Semnornis ramphastinus, 327.
senilis, Merulaxis, 362.
    Myornis, 360, 362.
seniloides, Pionus seniloides, 263.
    Psittacus, 263.
sennetti, Tachytriorchis albicaudatus, 242.
septentrionalis, Euscarthmus, 440.
Sericossypha albocristata, 618.
Serpophaga cinerea, 447.
    cinerea cana, 447.
    cinerea grisea, 447.
    pœcilocerca, 431.
serrana, Planesticus, 533.
serranus, Planesticus, 532.
    Turdus, 532.
serratus, Tinamus, 189.
Setophaga albidiedema, 428.
    chrysops, 549.
    ornata, 549.
    ruticilla, 548.
    verticalis, 548.
setophagoides, Mecocerculus leucophrys, 430.
    Tyrannula, 430.
severa, Ara, 257.
severus, Psittacus, 257.
Shags, 236.
Sicalis arvensis minor, 566.
    columbiana, 565.
    flaveola, 565.
similis, Diglossa, 579.
    Diglossa sittoides, 579.
Simon, E., and Le Comte de Dalmas, publications by, 18.
simoni, Cotinga, 499.
Simons, F., collections by, 19.
Simonula berlepschi, 295.
simplex, Cænotriccus, 442.
    Lathria, 495.
    Muscicapa, 495.
sincipitalis, Ostinops, 55, 626.
    Ostinops alfredi, 150, 626.
Siptornis antisiensis, 406.
    erythrops, 155.
    erythrops griseigularis, 407.
    flammulata flammulata, 407.
    flammulata multostriata, 407.
Siptornis flammulata quindiana, 407.
    striaticollis, 407.
Sirystes albocinereus, 463.
Sittasomus perlatus, 416.
sitticolor, Conirostrum, 583.
sittoides, Diglossa, 579.
Siurus nævius notabilis, 547.
Skimmers, 221.
Skuas, 221.
smaragdina, Cyanolesbia mocoa, 308.
smaragdinipectus, Eriocnemis, 300.
    Vestipedes vestitus, **300**, 301.
Smith, H. H., collections by, 19; work by, 6.
Snipes, 222.
sociabilis, Herpetotheres, 249.
    Rostrhamus, 249.
soderstromi, Heliangelus exortis, **304**, 305.
Solitaires, 532.
solitaria, Tringa, 223.
solitarius, Amblycercus, 629.
    Cassicus, 629.
    Helodromas solitarius, 223.
    Rhyncophilus, 223.
    Tinamus, 189.
    Totanus, 223.
solstitialis, Troglodytes, 17, 521.
    Troglodytes solstitialis, 521.
somptuosa, Compsocoma, 605.
sonnini, Colinus cristatus, 199.
sororia, Elænia pagana, 455.
    Lochmias, 401.
souancei, Microsittace, 259.
    Pyrrhura, 259.
soui, Crypturus soui, 133, **191**.
    Tinamus, 191.
spadix, Pheugopedius, 514.
Sparrows, 555.
sparveria, Cerchneis, 252.
    Cerchneis sparveria, 251.
Sparvius bicolor, 242.
    platypterus, 243.
Spathura underwoodi, 303.
speciosa, Columba, 202.
spectabilis, Arremon, 573.
    Selinidera, 109, **334**.
spengeli, Psittacula, 131, **261**.
Spermophila aurita, 557, 558.

Spermophila grisea, 557.
  gutturalis, 558.
  luctuosa, 559.
  minuta, 557.
Sphenura subulata, 408.
sphenura, Passerina, 571.
sphenurus, Emberizoides, 571.
spicifer, Lophotriccus, 442.
spiciferum, Todirostrum, 442.
spilonotum, Syrnium, 254.
spilorhynchus, Andigena, 331, 332.
  Andigena nigrirostris, **331**, 332.
spinescens, Chrysomitris, 563.
  Spinus spinescens, 563.
spinosa, Fulica, 225.
  Jacana, **225**, 226, 660.
Spinus nigricauda, 563, **564**.
  spinescens spinescens, 563.
  xanthogaster, 564.
Spiza americana, 566.
Spizaëtus isidorii, 248.
  ornatus, 248.
  tyrannus, 248.
splendens, Campophilus, 355.
  Cniparchus hæmatogaster, 355.
  Fringilla, 561.
  Volatinia, 561.
  Volatinia jacarini, 561.
Spodiornis jardini, 573.
Spoonbills, 228.
Sporathraupis cyanocephala auricrissa, 608.
Sporophila aurita aurita, 557.
  aurita murallæ, 558.
  aurita ophthalmica, 558.
  castaneiventris, 557.
  grisea, 557.
  grisea grisea, 557.
  gutturalis, 558.
  luctuosa, 559.
  minuta minuta, 557.
  ophthalmica, 558.
spurius, Icterus, 633.
  Oriolus, 633.
squamæcrista, Lophotriccus squamæcrista, 140.
  Todirostrum, 442.
squamæcristatus, Lophotriccus squamæcristatus, 442.
squamatus, Capito, 114, **325**; range of, figured, 114.
squamatus, Celeus, 354.
squamiger, Merulaxis, 360.
squamigera, Grallaria, 394.
squamulatus, Microcerculus squamulatus, 528.
  Picumnus, 356.
  Picumnus squamulatus, 356.
Stapleton, D. C., acknowledgement to, 9.
Steganura underwoodi, 303.
Stelgidopteryx ruficollis æqualis, 505.
  ruficollis ruficollis, 505.
  ruficollis uropygialis, 506.
  uropygialis, 109, 505.
stellata, Margarornis, 416.
stellatus, Myiotriccus ornatus, 469.
Stenopsis cayennensis cayennensis, 274.
  cayennensis monticola, 275.
  ruficervix, 275.
  tobagensis, 275.
stenorhynchum, Heteropelma, 488.
stenorhynchus, Scotothorus turdinus, 488.
Sterna chloropoda, 221.
stewartæ, Anthoscenus longirostris, 311.
  Heliomaster, 311.
stictoptera, Elainia, 431.
stictopterus, Mecocerculus, 431.
Stictornis cinctus, 498.
Stilts, 222.
stolzmanni, Chlorothraupis, 614.
  Phœnicothraupis, 614.
  Urothraupis, 163, **622**.
Stone, Dr. Witmer, acknowledgement to, 10.
Storks, 228.
Streptoprocne zonaris, 161.
  zonaris albicincta, 161, 276, **267**.
  zonaris altissima, 161, **276**.
  zonaris, minor, 277.
striata, Ardea, 230.
  Butorides, 230.
  Dendroica, 546.
  Muscicapa, 546.
striaticeps, Drymophila caudata, 378.
  Heleodytes turdinus, 510.
  Mionectes, 448.
  Orodynastes striaticollis, 166, **427**.
  Philydor montanus, 412.

striaticeps, Siptornis, 407.
  Synallaxis, 407.
  Tænioptera, 427.
striatigularis, Chrysoptilus punctigula, 350.
striatipectus, Saltator, 563.
  Saltator striatipectus, 563.
striatulus, Thriothorus, 518.
  Troglodytes musculus, **518** 520, 521.
stricklandi, Lophostrix cristatus, 253.
Strigiformes, 252.
strigilatus, Ancistrops, 413.
  Trogon, 316.
  Trogon strigilatus, 316.
striigularis, Phaëthornis, 283.
  Phœthornis striigularis, 283, 284.
  Pygmornis, 283.
striolata, Pipra, 482.
striolatus, Machæropterus, 482.
Strix brasiliana, 255.
  choliba, 253.
  flammea, 256.
  perlata, 256.
  phalænoides, 255.
strophium, Odontophorus, 201.
  Ortyx (Odontophorus), 201.
stübeli, Oxypogon, 306.
Sturnella ludoviciana, 632.
  magna meridionalis, 53, 136, **632**.
  meridionalis, 56, 632.
stygius, Asio, 252.
  Nyctalops, 252.
subalaris, Anabates, 413.
  Macraglæus, 635.
  Quiscalus, 635.
  Xenicopsis subalaris, 413.
subfulvus, Philydor, 411.
Sublegatus glaber, 460.
suboles, Electron platyrhynchus, 270.
subplacens, Myiopagis, 458.
subpudica, Synallaxis, 404.
subrufescens, Momotus, 271.
  Momotus subrufescens, 271.
  Phœthornis striigularis, **283**, 284.
Subsidence, 156, 157.
Subspecies, treatment of, 175.
subtectus, Bucco, 340.
  Bucco tectus, 340.
  Notharchus tectus, 340.
subtilis, Urubitinga, 18.
Subtropical Zone, Faunas of, 135.
subulata, Sphenura, 408.
subulatus, Hyloctistes subulatus, 408.
subvinacea, Columba, 204.
subviridis, Acrochordopus, 451.
Sula etesiaca, 18.
sulphuratus, Lanius, 462.
  Pitangus, 462.
  Pitangus sulphuratus, 462.
sulphureipygius, Myiobius, 467.
Sun-Bitterns, 226.
superciliare, Todirostrum schistaceiceps, 438.
superciliaris, Arremon, 621.
  Hemispingus superciliaris, 621.
  Saltator, 563.
  Todirostrum, 438.
superciliosus, Accipiter, 241.
  Falco, 241.
surinamensis, Myrmotherula, 373.
surinamus, Tachyphonus, 616.
  Tachyphonus surinamus, 616.
swainsoni, Hylocichla ustulata, 538.
  Ramphastos, 328.
swainsonii, Turdus, 538.
Swallows, 501.
Swallow-Tanagers, 587.
Swans, 233.
Swifts, 276.
Sycalis columbiana, 565.
  flaveola, 565.
  minor, 566.
sylvestris, Scytalopus, 360.
Sylvia cærulea, 545.
  castanea, 546.
  peregrina, 543.
  philadelphia, 546.
Sylviidæ, 507.
Synallaxis albescens, 403.
  albescens albigularis, 403.
  albigularis, 403.
  antisiensis, 406.
  azaræ azaræ, 402.
  azaræ elegantior, 402.
  azaræ media, 402.
  candæi, 131, 405.
  candæi candæi, 405.
  cinnamomea, 405.

Synallaxis cinnamomea fuscifrons, 405.
  elegans, 402.
  elegantior, 402.
  erythrops, 407.
  fuliginosa, 402.
  fuscifrons, 405.
  gujanensis columbianus, 405.
  gujanensis gujanensis, 405.
  gularis, 406.
  gularis gularis, 406.
  gularis rufipectus, 406.
  mœsta, 403.
  mœsta mœsta, 133, **403**.
  mœsta obscura, 403.
  multostriata, 407.
  nigrifumosa, 404.
  pudica, 404.
  pudica caucæ, 404.
  pudica nigrifumosa, 404.
  pudica pudica, 404.
  rutilans amazonica, 406.
  rutilans caquetensis, 406.
  striaticollis, 407.
  subpudica, 404.
  unirufa, 405.
syrmatophorus, Phaëthornis, 282.
  Phæthornis syrmatophorus, 282.
  Phœthornis syrmatophorus, 282.
Syrnium albitarse, 254.
  albo-gularis, 254.
  spilonotum, 254.
  virgatum, 254.

Tachybaptus dominicus, 221.
Tachyphonus, 617.
  canigularis, 619.
  cassinii, 617.
  delattrei, 616.
  delattrii, 616.
  luctuosus, 616.
  melaleucus, 615.
  rufus, 615.
  surinamus, 616.
  surinamus surinamus, 616.
  victorini, 605.
  xanthopygius, 615.
Tachytriorchis albicaudatus exiguus, 242.
  albicaudatus sennetti, 242.
tæniata, Dubusia, 606.
tæniatus, Microcerculus squamulatus, 528.
Tænioptera striaticollis, 427.
Talpacotia rufipennis, 209.
tamatia, Nystactes, 341.
Tanagers, 587.
Tanagra albofrenatus, 576.
  assimilis, 577.
  atra, 623.
  atricapilla, 600.
  aurea pileata, 588.
  auricrissa, 608.
  aurifrons, 567.
  aurulenta, 594.
  cana, 58, 607.
  chilensis, 123.
  chrysopasta, 591.
  concinna, 589.
  crassirostris crassirostris, 591.
  cucullata, 603.
  cyanocephala, 608.
  cyanocephala cyanocephala, 588.
  dubusia, 601.
  episcopus, 55, 56.
  (Euphone ?) vassorii, 592.
  eximia, 604.
  fulvicrissa omissa, 590.
  fulvicrissa purpurascens, 590.
  gularis, 573.
  labradorides, 599.
  leucoptera, 607.
  lunulata, 602.
  maximus, 561.
  melanoptera, 608.
  melanura, 591.
  nigrogularis, 609.
  notabilis, 606.
  olivacea humilis, 590.
  pallidinucha, 576.
  palmarum, 58, 608.
  palmarum melanoptera, 608.
  palpebrosa, 602.
  parzudaki, 600.
  parzudakii, 600.
  pretrei, 587.
  riefferi, 622.
  ruficervix, 599.
  saturata, 126, **590**.
  schistaceus, 576.

Tanagra schrankii, 593.
  semirufus, 577.
  xanthogastra brevirostris, 588, **589**.
  xanthogastra chocoensis, **588**, 589.
  xanthogastra quitensis, 589.
Tanagrella rufigula, 594.
Tanagridæ, 587.
Tangara albocristatus, 618.
  atricapilla, 600.
  aurulenta aurulenta, 594.
  aurulenta occidentalis, 595.
  chilensis, 593.
  cyaneicollis cæruleocephala, 598.
  cyaneicollis granadensis, 599.
  florida arcæi, 593.
  florida auriceps, 593.
  florida florida, 593.
  guttata bogotensis, 594.
  guttata eusticta, 594.
  guttata tolimæ, 594.
  gyroloides bangsi, 597.
  gyroloides catharinæ, 597.
  gyroloides gyroloides, 596.
  icterocephala, 595.
  inornata inornata, 598.
  johannæ, 593.
  labradorides, 600.
  larvata fanny, 598.
  lavinia lavinia, 596.
  melanotis, 600.
  mexicana boliviana, 298.
  nigroviridis, 598.
  nigroviridis nigroviridis, 598.
  palmeri, 597.
  rufa, 615.
  ruficervix ruficervix, 599.
  rufigula, 594.
  schrankii, 593.
  sclateri, 595.
  venusta, 600.
  vitriolina, 595.
  xanthogastra, 594.
Tantalus cayennensis, 227.
tao, Tinamus, 187.
Tapacolas, 359.
Tapera nævia, 323.
tapera, Phæoprogne tapera, 503.
Taraba transandeana granadensis, 364,
  transandeana transandeana, 364.
Taraba unduliger, 364.
temmincki, Ornismya, 299.
  Pterophanes, 299.
Temperate Zone, Birds of the, 164; The, 159–165.
Temperature, 79.
tenebrosa, Chelidoptera, 12.
tenellus, Trogonurus curucui, 315.
tenuepuntatus, Thamnophilus, 368.
tenuifasciatus, Thamnophilus, 368.
tenuipunctatus, Thamnophilus, 368.
Terenotriccus erythrurus fulvigularis, 469.
Terenura callinota, 378.
tersa, Procnias, 587.
Tersina viridis occidentalis, 587.
Tersinidæ, 587.
tessellatus, Troglodytes, 518, 520.
testacea, Piranga testacea, 613.
  Pyranga, 613.
Tetragonus ramphastinus, 327.
Tetrao cinereus, 191.
texensis, Chordeiles, 273.
  Chordeiles acutipennis, 273.
  Myiozetetes, 460.
  Myiozetetes similis, 461.
Thalurania cœlina, 287.
  colombica, 293.
  colombica colombica, 293.
  fanniæ, 291.
  fannyi, 291.
  fannyi fannyi, **291**, 292.
  fannyi verticeps, 292.
  nigrofasciata, 292.
  verticeps, 292.
Thamnistes æquatorialis, 369.
  anabatinus intermedius, 369.
Thamnomanes glaucus, 373.
Thamnophilus albicans, 368.
  atrinucha, 366.
  berlepschi, 368.
  cachabiensis, 381.
  canadensis pulchellus, 367.
  doliatus doliatus, 367.
  doliatus fraterculus, 368.
  gorgonæ, 18.
  immaculatus, 384.
  major transandeanus, 364.
  melanoceps, 382.

Thamnophilus multistriatus, 368.
  nævius, 366, 367.
  nævius atrinucha, 367.
  nigriceps, 119, **365**; known range of, figured, 119.
  pulchellus, 367.
  punctatus atrinucha, 366.
  punctatus punctatus, 366.
  radiatus albicans, 122, **368**.
  strigilatus, 413.
  tenuepuntatus, 368.
  tenuifasciatus, 368.
  tenuipunctatus, 368.
  transandeanus, 364.
  unicolor, 365.
  unduliger, 364.
  virgatus, 365.
Thaumatias fluviatilis, 286.
  viridiceps, 286.
Thayer, J. E., and Outram Bangs, publications by, 18.
theresæ, Conopophaga, 387.
  Hylophylax nævia, 387.
Theristicus caudatus, 227.
  colombianus, 227.
Thermochalcis cayennensis cayennensis, 274.
  cayennensis monticola, 275.
  ruficervix, 275.
Thick-Knees, 226.
thoracicus, Campylorhamphus, 424.
  Formicarius, 147.
Thrashers, 529.
Thraupis cana cana, 122, 131, **607**.
  cœlestis cœlestis, 607.
  episcopus leucoptera, 136, **607**.
  episcopus leucopterus, 623.
  glaucocolpa, 608.
  palmarum, 125; range of, figured, 125.
  palmarum melanoptera, 122, 126, **608**.
  palmarum violivata, 608.
Threnetes cervinicauda, 279.
  fraseri, 279.
  rucheri, 279.
  ruckeri fraseri, 279.
Thriothorus fasciato-ventris, 515.
  leucotis, 511.
Thriothorus striatulus, 518.
Thripadectes flammulatus, 412.
  rufobrunneus, 413.
  sclateri, 412.
  virgaticeps, 412.
  virgaticeps, sclateri, 412.
Thripobotus warscewiczi, 423.
Thrushes, 532.
Thryophilus albipectus bogotensis, 512.
  bogotensis, 512.
  galbraithi galbraithi, 512.
  leucopogon, 513.
  leucotis, 511.
  minlosi, 512.
  nigricapillus, 16, 513, 514.
  nigricapillus connectens, 140, **514**.
  nigricapillus schotti, 140, **513**, 514.
  rufalbus castanotus, 512.
  rufalbus cumanensis, 512.
Thryothorus fasciativentris, 515.
  galbraithi, 512.
  hypospodius, 517.
  leucotis, 511.
  mystacalis, 17, 515.
  nigricapillus, 513.
  schotti, 513.
  sclateri, 517.
  sp. ?, 511.
Tiaris bicolor omissa, 560.
  olivacea pusilla, 560.
  omissa, 560.
  pusilla, 560.
tibialis, Atticora, 504.
  Neochelidon, 504.
  Petrochelidon, 504.
Tigrisoma lineatum, 230.
  salmoni, 231.
Tinamidæ, 187.
Tinamiformes, 187.
Tinamous, 187.
Tinamus bonapartei, 190.
  castaneiceps, 189.
  julius, 190.
  latifrons, 189.
  major, 189.
  major castaneiceps, 188, **189**.
  major fuscipennis, 189.
  major latifrons, 188, **189**.
  major major, 188.

Tinamus major ruficeps, **187**, 188, 190.
  ruficeps, 187.
  serratus, 189.
  solitarius, 189.
  soui, 191.
  tao, 187.
tinus, Accipiter, 241.
Tityra buckleyi, 490.
  cayana, 488.
  inquisitor, 490.
  inquisitor erythrogenys, 490.
  personata, 489.
  semifasciata, 488, 489.
  semifasciata columbiana, 489.
  semifasciata costaricensis, 489.
  semifasciata esmeraldæ, 109, **489**.
  semifasciata semifasciata, **488**, 489.
tobagensis, Stenopsis, 275.
tocard, Ramphastos, 328.
tocardus, Ramphastos, 328.
Tochecito River, explorations on the, 29.
Todd, W. E. Clyde, acknowledgement to, 10.
Todirostrum cinereum, 437.
  cinereum cinereum, 437.
  cinereum finitimum, 438.
  exile, 444.
  granadense, 440.
  latirostre, 439.
  nigriceps, 438.
  ruficeps, 439.
  schistaceiceps griseolum, 439.
  schistaceiceps superciliare, 438.
  sclateri, 438.
  spiciferum, 442.
  squamæcrista, 442.
  superciliaris, 438.
Todus cinereum, 437.
tolimæ, Tangara guttata, 594.
tolimensis, Mimus gilvus, **529**, 530.
tombacea, Galbula, 336.
  Galbula tombacea, 336.
Topography, Colombian, an outline of, 70.
torquata, Alcedo, 266.
  Bourcieria, 297.
  Ceryle, 266.
  Ceryle torquata, 266.
  Helianthea, 297.
torquata, Megaceryle torquata, 266.
  Ornismya, 297.
  Rhopoterpe torquata, 388.
torquatus, Formicarius, 388.
  Microbates cinereiventris, 379.
  Pteroglossus, 332.
Totanus flavipes, 223.
  melanoleucus, 223.
  solitarius, 223.
Toucans, 328.
tovi, Brotogerys, 261.
  Conurus, 261.
transandeana, Taraba transandeana, 364.
transandeanus, Thamnophilus, 364.
  Thamnophilus major, 364.
Treatment of genera, 171; of subspecies, 175.
triangularis, Dendrocolaptes, 420.
  Dendrornis, 420.
  Xiphorhynchus, 419, **420**.
Trichas nigrocristatus, 549.
tricolor, Ardea, 229.
  Hydrannassa tricolor, 229.
Tringa macularia, 224.
  maculata, 224.
  minutilla, 224.
  solitaria, 223.
  wilsoni, 224.
Tringoides macularius, 224.
trinitatis, Ramphocænus, 379.
  Ramphocænus melanurus, 379.
Triptorhinus paradoxus, 361.
tristriatus, Basileuterus tristriatus, 551.
  Myiodioctes, 551.
Trochilidæ, 278.
trochilirostris, Xiphorhynchus, 424.
Trochilus amabilis, 286.
  angustipennis, 290.
  anthophilus, 282.
  aquila, 284.
  aureliæ, 302.
  barroti, 310.
  benjamini, 303.
  buffoni, 293.
  condaminii, 284.
  conversi, 312.
  cupripennis, 299.
  cyanotus, 294.
  elatus, 295.

Trochilus eurypterus, 307.
exortis, 304.
falcatus, 285.
fannyi, 291.
flavescens, 300.
franciæ, 287.
geoffroyi, 310.
gibsoni, 290.
(Glaucis) cæruleogaster, 293.
goudoti, 287.
gouldi, 310.
grayi, 289.
guimeti, 312.
herrani, 306.
jardinii, 300.
kingi, 307.
lafresnayi, 298.
lazulus, 285.
leadbeateri, 296.
ludoviciæ, 278.
lutetiæ, 297.
mellivorus, 286.
mitchelli, 311.
mosquera, 302.
nigricollis, 295.
nigrofasciata, 292.
oseryi, 282.
rubinoides, 296.
saucerottei, 288.
saül, 299.
tyrianthinus, 305.
tzacatl, 288.
victoriæ, 310.
viridigaster, 288.
williami, 305.
Troglodytes columbæ, 518, 520.
cumanensis, 512.
guttatus, 525, 526.
musculus albicans, 520.
musculus columbæ, 161, **520**, 521.
musculus **neglectus**, 518, 519, **520**, 521.
musculus striatulus, **518**, 520, 521.
solstitialis, 17, 521.
solstitialis pallidipectus, 521.
solstitialis solstitialis, 521.
tessellatus, 518, 520.
Troglodytidæ, 508.
Trogon antisiensis, 313.
Trogon assimilis, 314.
auriceps, 313.
chionurus, 317.
macroura, 318.
macrourus, 318.
macrurus, 318.
massena, 318.
melanopterus, 317.
melanurus, 318.
pavoninus, 313.
personata, 313.
personatus, 314.
ramoniana, 317.
strigilatus, 316.
strigilatus chionurus, 317.
strigilatus strigilatus, 316.
variegatus, 316.
viridis, 316.
Trogones, 313.
Trogonidæ, 313.
Trogons, 313.
Trogonurus ambiguus, 315.
assimilis, 161, **314**.
bolivianus, 316.
collaris, 315.
curucui cupreicauda, 315.
curucui curucui, 315.
curucui tenellus, 315.
personatus, 161, **313**, 314.
Tropical Zone and its Faunas, 93.
Trumpeters, 227.
tschudi, Hemipipo, 483.
Piprites, 483.
tuberculifer, Myiarchus tuberculifer, 477.
Tyrannus, 477.
Tumaco, explorations about, 8, 49.
Turdidæ, 532.
turdina, Chamæza, 391.
turdinus, Anabates, 409.
Automolus ochrolæmus, 409.
Turdus aliciæ, 537.
atricapillus, 530.
auritus, 362.
colombianus, 536.
crinitus, 474.
daguæ, 534.
ephippialis, 536.
gigantodes, 537.
gigas, 536, 537.

Turdus gymnophthalmus, 534.
  ignobilis, 534.
  ignobilis debilis, 535.
  ignobilis goodfellowi, 535.
  leucops, 533.
  phæopygus, 533.
  serranus, 532.
  swainsonii, 538.
  tristis daguæ, 534.
Turnstones, 222.
Tyrannidæ, 427.
tyrannina, Cercomacra tyrannina, 380.
  Dendrocincla, 418.
  Dendrocincla tyrannina, 418.
  Pyriglena, 380.
tyranninus, Dendrocops, 418.
Tyranniscus chrysops, 454.
  chrysops chrysops, 454.
  chrysops minimus, 454.
  cinereiceps, 454.
  flavifrons, 454.
  griseiceps, 450.
  leucogonys, 451.
  nigricapillus, 453.
  nigricapillus nigricapillus, 453.
Tyrannula ardosiaca, 473.
  cineracea, 472.
  frontalis, 428.
  fumigatus, 427.
  ornata, 469.
  phœnicura, 470.
  richardsoni, 474.
  setophagoides, 430.
Tyrannulus brunneicapillus, 452.
  chrysops, 454.
  cinereiceps, 454.
  elatus, 453.
  elatus reguloides, 453.
  nigro-capillus, 453.
  reguloides, 453.
tyrannulus, Myiarchus, 474.
  Myiarchus tyrannulus, 474.
  Muscicapa, 474.
Tyrannus albicollis, 459.
  cinchoneti, 462.
  dominicensis, 478.
  griseus, 478.
  melancholichus, 27, 478.
  melancholicus satrapa, 478.
Tyrannus niveigularis, **478**, 479.
  pipiri, 478.
  tuberculifer, 477.
  tyrannus, 478.
tyrannus, Lanius, 478.
  Milvulus, 479.
  Muscicapa, 479.
  Muscivora, 131, **479**.
  Spizaëtus, 248.
  Tyrannus, 478.
Tyrant Flycatchers, 427.
tyrianthina, Metallura, 305.
  Metallura tyrianthina, 305.
tyrianthinus, Trochilus, 305.
Tyto perlata, 256.
tzacatl, Amazilis tzacatl, 288.
  Amizilis tzacatl, 288.
  Trochilus, 288.

ujhelyii, Chrysoptilus, 349.
  Chrysoptilus punctigula, 350.
umbrosus, Formicarius, 389.
  Formicarius moniliger, 389.
uncinatus, Cymindis, 250.
  Falco, 249.
  Leptodon, 249, 250.
Uncirostrum d'orbignyi, 580.
  lafresnayei, 581.
underwoodi, Ocreatus underwoodi, 140, **303**.
  Ornismya, 303.
  Spathura, 303.
  Steganura, 303.
unduliger, Taraba, 364.
  Thamnophilus, 364.
Unforested Mountain Areas, 78.
Unforested Tropical Areas, 75.
unibrunnea, Cinnicerthia, 17, **508**.
  Limnornis, 508.
unicolor, Dysithamnus, 365.
  Phrygilus unicolor, 572.
  Ramphocelus, 610.
  Ramphocelus carbo, 610.
  Scytalopus, 359.
  Thamnophilus, 365.
uniformis, Neocrex, 219.
unirufa, Cinnicerthia, 508.
  Lathria, 494.
  Synallaxis, 405.

unirufus, Limnornis, 508.
  Lipaugus, 494.
Upucerthia excelsior columbiana, 167, **401**, 433.
  excelsior excelsior, 401.
Uranomitra franciæ, 287.
urochrysa, Chalybura, **293**, 294.
  Hypuroptila, 293.
Uropsalis lyra, 273.
uropygialis, Basileuterus, 553.
  Cacicus uropygialis, 140, **628**.
  Cassicus, 628, 629.
  Cotyle, 506.
  Mecocerculus, 453.
  Pheucticus uropygialis, 555.
  Stelgidopteryx, 505.
  Stelgidopteryx ruficollis, 506.
Urospatha martii, 267.
  martii martii, 267.
  martii semirufa, 267.
Urosticte benjamini benjamini, 303.
  benjamini rostrata, 303.
Urothraupis stolzmanni, 163, 622.
Urubitinga mexicana, 247.
  plumbea, 247.
  schistacea, 247.
  subtilis, 18
  urubitinga, 247.
urubitinga, Falco, 247.
  Urubitinga, 247.
urubu, Catharista, 238.
  Vultur, 238.
usta, Scops.

validus, Dendrocolaptes, 426.
  Dendrocolaptes validus, 426.
Vanellus cayennensis, 222.
varia, Grallaria, 395.
  Mniotilta, 543.
  Motacilla, 543.
variegatus, Trogon, 316.
vassori, Diva, 592.
  Procnopis, 592.
vassorii, Tanagra (Euphone ?), 592.
vegeta, Grallaricula, 399, 400.
Velez, Sr. Jesus, acknowledgement to, 9, 27.
velutina, Pipra, 481.
  Pipra coronata, 481.
venezuelensis, Arremonops, 569.
  Atalotriccus pilaris, 444.
  Campylorhamphus trochilirostris, 424.
  Chlorospingus albitempora, 618.
  Molothrus, 631.
  Myiadestes ralloides, 532.
  Myiarchus, 475.
  Myiarchus (ferox ?), 475.
  Pipridea, 592.
  Pipridea melanota, 592.
  Xiphorhynchus, 424.
Veniliornis dignus, 352.
  fidelis, 353.
  kirki cecilii, 353.
  nigriceps equifasciatus, 352.
  oleaginus aureus, 352.
  oleaginus fumigatus, 351.
  oleaginus sanguinolentus, 352.
  olivinus, 353.
  ruficeps hæmatostigma, 353.
ventralis, Accipiter, 242.
venusta, Calliste, 600.
  Dacnis, 585.
  Tangara, 600.
veræpacis, Heteropelma, 488.
veraguensis, Geotrygon, 214.
  Oreopeleia, 214.
Vermivora chrysoptera, 543.
  peregrina, 543.
verreauxi, Leptoptila, 210.
  Leptotila verreauxi, 140, **210**, 211.
versicolor, Pachyrhamphus, 490.
  Vireo, 490.
verticalis, Creurgops, 616.
  Myioborus verticalis, 548.
  Nemosia, 622.
  Pseudospingus, 622.
  Setophaga, 548.
verticeps, Thalurania, 292.
  Thalurania fannyi, 292.
Vestipedes aureliæ aureliæ, 302.
  aureliæ caucensis, 302.
  derbyi longirostris, 302.
  mosquera, 302.
  nigrivestris, 301
  paramillo, 301.
  vestitus, 301.
  vestitus smaragdinipectus, **300**, 301.

Vestipedes vestitus vestitus, 300.
vestita, Ornismya, 300.
vestitus, Vestipedes, 301.
    Vestipedes vestitus, 300.
victoriæ, Psalidoprymna victoriæ, 310.
    Trochilus, 310.
victorini, Compsocoma somptuosa, 605.
    Tachyphonus, 605.
viduata, Myrmotherula, 374.
    Myrmotherula fulviventris, 374.
vigua, Carbo, 236.
    Hydrocorax, 236.
    Phalacrocorax vigua, 236.
Villavicencio, explorations about, 14, 54.
villosus, Myiobius, **465**, 466, 467.
    Myiobius sulphureipygius, 467.
    Phœthornis, 282.
violaceus Chrysotrogon, 317.
    Cyanocorax, 637.
violea, Cassidix oryzivora, 630.
violicauda, Lampornis, 295.
violilavata, Thraupis palmarum, 608, 660.
virens Contopus, 473.
    Muscicapa, 473.
    Myiochanes, 473.
Vireo chivi chivi, 539.
    flavifrons, 540.
    flavoviridis, 539.
    josephæ, 540.
    olivaceus, 539.
    versicolor, 490.
Vireonidæ, 539.
Vireos, 539.
Vireosylva chivi caucæ, 539.
    flavoviridis, 539.
    flavoviridis flavoviridis, 539.
    josephæ josephæ, 540.
    olivacea, 539.
virescens, Empidonax, 473.
    Platyrhynchus, 473.
virgata, Ciccaba, 254.
    Ciccaba virgata, 254.
virgaticeps, Thripadectes, 412.
virgatum, Syrnium, 254.
virgatus, Thamnophilus, 365.
virginianus, Chordeiles, 173, 273.
virginicus, Charadrius, 222.
viridicata, Myiopagis viridicata, 458, 459.
viridiceps, Agyrtrina, 286.
    Rhynchocyclus, 436.
    Thaumatias, 286
viridigaster, Saucerottia, 288.
    Trochilus, 288.
viridis, Procnias, 587.
    Trogon, 316.
viridissima, Agyrtrina, 286.
vitellina, Pipra, 487.
vitellinus, Cacicus, 627.
    Cassicus, 627.
    Manacus, 485.
    Manacus vitellinus, 126, **487**.
vitriolina, Callispiza, 595.
    Calliste, 595.
    Tangara, 595.
Volatinia jacarina, 561.
    jacarini splendens, 561.
    splendens, 561.
Vultur aura, 238.
    gryphus, 237.
    papa, 237.
    urubu, 238.
Vultures, 237.

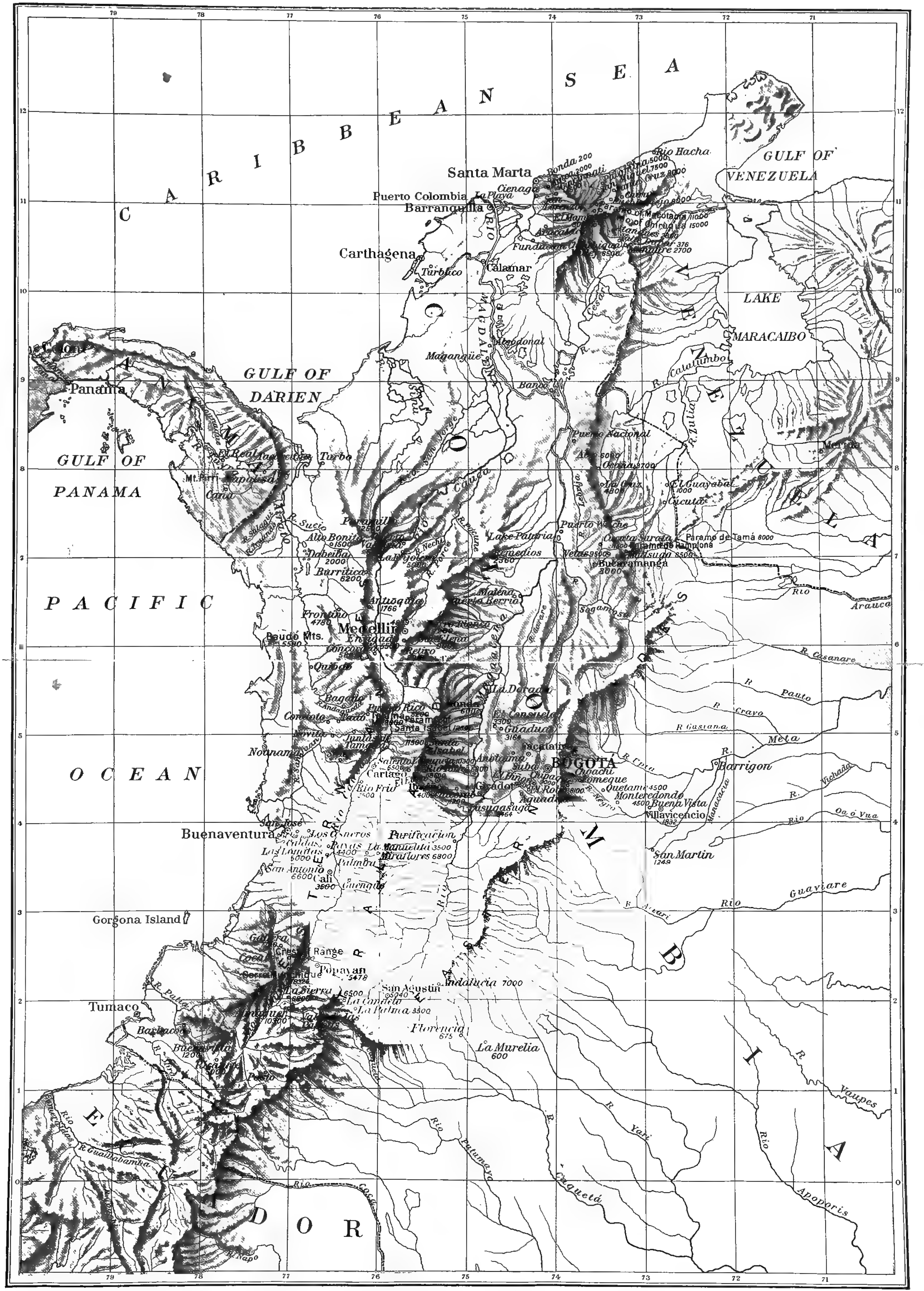
wagleri, Aratinga, 257.
    Cacicus, 623.
    Conurus, 257.
    Ocyalus, 623.
    Zarhynchus, 108; range of, figured, 108.
    Zarhynchus wagleri, 623.
Wagtails, 554.
warscewiczi, Picolaptes, 423.
    Thripobotus, 423.
watsoni, Ephialtes, 253.
    Otus, 253.
Wax Palms, when discovered, 29.
West Andean Subtropical Fauna, 145; list of species and subspecies of the, 148.
White, Robert Blake, publications by, 80, 127.
williami, Metallura, 305.
    Trochilus, 305.
wilsoni, Gallinago, 224.
    Tringa, 224.
Wilsonia canadensis, 548.
Wolf, Teodoro, publications by, 7, 110.

Wood, Charles J., Jr., work by, 17.
Wood, William S., work by, 17.
Woodhewers, 400.
Woodpeckers, 345.
Wood-Warblers, 543.
Wrens, 506.
Wyatt, Claude, explorations of, 15; publications by, 52.

xanthochlorus, Chloronerpes, 347.
xanthogaster, Spinus, 564.
xanthogastra, Calliste, 594.
    Chrysomitris, 564.
    Euphonia, 588.
    Tangara, 594.
xanthopygius, Heterospingus, 615.
    Tachyphonus, 615.
Xanthornus decumanus, 624.
    Icterus, 634.
    Icterus xanthornus, 634.
    leucorhamphus, 628.
    mesomelas salvini, 633.
    Oriolus, 634.
Xanthosomus icterocephalus, 632.
Xanthoura cyanodorsalis, 56, 638.
    yncas andicola, 638.
    yncas cyanodorsalis, 136, 150, 637, **638**.
    yncas galeata, 52.
    yncas galeatus, 150, **637**.
Xenerpestes minlosi, 119.
Xenicopsis subalaris columbianus, 413.
    subalaris mentalis, 413.
    subalaris subalaris, 413.
Xenops genibarbis, 414.
    genibarbis littoralis, 413.
    heterurus, 414.
    littoralis, 414.
    rutilus, 414.
    rutilus heterurus, 414.
Xiphocolaptes promeropirhynchus, 422.
Xiphorhynchus æquatorialis æquatorialis, 419.
    æquatorialis insolitus, 420.
    elegans, 422.
    guttata guttatoides, 419.
    insignis, 422.
    lachrymosus alarum, 421.
    lachrymosus lachrymosus, 420, 421.
    lachrymosus rostratus, 420.
Xiphorhynchus nanus nanus, 421.
    ocellata, 422.
    procurvoides, 424.
    pucherani, 426.
    pusillus, 425.
    triangularis, 419, **420**.
    trochilirostris, 424.
    venezuelensis, 424.
Xylocota jamesoni, 225.

yapura, Crypturus adspersus, 193.
    Pezus, 193.
yaruqui, Phæthornis, 281.
yetapa, Elanoides, 249.
    Elanoides forficatus, 249.
yncas, Cyanocorax, 637.
yuracares, Cassicus, 624.
    Gymnostinops, 624.

Zamelodia ludoviciana, 555.
Zarhynchus wagleri, 108; range of, figured, 108.
    wagleri wagleri, 623.
Zebrapicus pucherani, 351.
zeledoni, Acrochordopus, 451.
    Cyanocorax affinis, 636.
    Idiotriccus, 451.
    Myrmeciza immaculatus, 384.
    Pogonotriccus, 451.
Zenaida auriculata, 206.
    bogotensis, 207.
    ruficauda, 207.
    ruficauda **antioquiæ,** 161, **207**, 208.
    ruficauda robinsoni, **207**, 208.
    ruficauda ruficauda, 161, **207**, 208.
Zonal Distribution of Colombian Birds, Tabular Synopsis by Families of, 168.
zonaris, Hemiprocne, 277.
    Streptoprocne, 161.
zonatoides, Campylorhynchus, 511.
Zone Formation, factors in, 92.
zononota, Dichrozona, 385.
Zonotrichia pileata, 568.
Zoölogical Survey of South America, when inaugurated by American Museum of Natural History, 3.
zosterops, Euscarthmus, 440.
    Euscarthmus striaticollis, 440.
zuliæ, Columba subvinacea, 205.


CARIBBEAN SEA
GULF OF VENEZUELA
LAKE MARACAIBO
GULF OF DARIEN
GULF OF PANAMA
PACIFIC OCEAN
PANAMA
COLOMBIA
VENEZUELA
ECUADOR
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Barranquilla
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Calamar
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Cali
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Merida
Andalucia 7000
La Murelia 600
Florencia 675
R. Guaviare
R. Meta
R. Casanare
R. Arauca
R. Caquetá
R. Putumayo
R. Napo
R. Vaupes
R. Apoporis
Rio Magdalena
R. Cauca
79
78
77
76
75
74
73
72
71
0
1
2
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11
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Map of Colombia (except of extreme eastern portion)

Based chiefly on the maps of Robert Blake White and the Intercontinental Railway Commission, on data

the American Geographical Society and information gathered by the American Museum's expeditions

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